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AFTERMATH OF CHERNOBYL NUCLEAR POWER PLANT ACCIDENT

- PART IV

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SOVIET UNION POLITICAL AFFAIRS

AFTERMATH OF CHERNOBYL NUCLEAR POWER PLANT ACCIDENT - PART IV

[For Part I of this material see JPRS-UPS-86-038 of 6 August 1986, for Part II see JPRS-UPS-87-004 of 22 January 1987, for Part III see JPRS-UPS-87-023 of 27 March 1987]

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FIRE FIGHTER INTERVIEWED IN MOSCOW

Moscow TRUD in Russian 16 Jan 87 p 4

[Article by S. Mostovshchikov under the "Reporter's Notebook" rubric: "A Hero from the Pripyat Shores"; first paragraph is TRUD introduction]

[Text] [Text] Moscow-- L. Telyatnikov wears two small shoulder-strap stars. This means that he is now a lieutenant colonel. Two days ago the "Gold Star" medal and the Order of Lenin were pinned to his tunic. For his courage and heroism, the chief of Paramilitary Firefighting Unit No. 2 safeguarding the Chernobyl AES, Leonid Petrovich Telyatnikov, then a major, was awarded the title of Hero of the Soviet Union. Yesterday he met with journalists in the Moscow Literary Coffee House.

It was spring, and his leave had one more day to go -- the 26th of April, 1986. Early in the morning of the following day Leonid Telyatnikov would put on his tunic and leave for work, at VPCh (Paramilitary Firefighting Unit) No. 2 safeguarding the Chernobyl AES. However, at 1:27a.m. of the 26th the telephone rang: Telyatnikov was being called to fight a fire which had broken out in the engine room of the plant. A militia vehicle "on loan" to the section took him to a fire which no one had previously had to face.

What helped him to maintain his composure during those troubled minutes? Professional experience, perhaps? As far as the latter was concerned, Telyatnikov was not a novice. He graduated from the Sverdlovsk Firefighting Technical School and the Higher Firefighting Engineering School of the USSR MVD and he had a number of years of practical experience. A short time previously he distinguished himself while extinguishing a peat bog fire in the Sovkhoz "Pripyatskiy" located in Chernobylskiy Rayon. But this current situation was beyond comparison. The fire raging in the plant threatened to spread to units which were still free of flames, with the possibility that....

"What did I feel? There was no time to have feelings," said Leonid Petrovich. "I arrived at the plant and immediately started to look for the boys already fighting the fire. I was evaluating the situation at the same time. I took charge of operations immediately. I had to climb to various heights -- up to the 71st meter mark. We were afraid of only one thing: not being able to cope with the fire.

"The first to become sick was Volodya Pravik. He started to suffer coughing, vomiting, and difficulty in breathing. He was helped to leave. I thought: 'It is nothing, it will pass.' This is what happens during ordinary fires. You know why: smoke, stench.

"The situation was difficult; melted bitumen was closing in on us from all sides. We fought the fire for almost three hours. We were finally able to contain the blaze. I drove to the unit to report to my superiors by telephone. While I was on the phone, I felt nausea and a weakness in my legs. I asked the driver to take me to a health care unit to obtain some kind of pills or injection."

What came next? Hospital Clinic No. 6 in Moscow. An isolation room which even doctors tried not to enter unless absolutely necessary to avoid introducing contamination. There were long months lying in a hospital bed, listening to the radio and catching news reports between treatments. Leonid Petrovich, along with the rest of the country, was following the events transpiring in Chernobyl.

Before I met with Telyatnikov, I looked through the newspapers. In a September issue of the previous year, I noticed a photograph of a happy face, while the caption underneath stated that the man was already resting in his parents' house in Kustanay Oblast. Printed alongside were two ukases issued by the Presidium of the USSR Supreme Soviet. One awarded the title of Hero of the Soviet Union to Internal Service Major Leonid Petrovich Telyatnikov. The other awarded the high title to Internal Service Lieutenant Vladimir Pavlovich Pravik and Viktor Nikolayevich Kibenek. However, there was a note of sadness connected with the latter awards: they were posthumous.

Leonid Petrovich's life was saved. Now he is sitting with us behind a table in the Literary Coffee House.

"I feel well. This evening I am leaving for Kiev. A new apartment is awaiting me and my family there. We must get settled in. Soon I will have many new things on my mind. I will start work as head of a testing section in a fire research laboratory of the UVD [Administration of Internal Affairs] Fire Safety Directorate in Kiev Oblast."

Our discussion came to an end. We said good-bye, I shook hands with the Hero of the Soviet Union and expressed my hearty thanks for everything that he had done.

13005
CSO: 1800/182

REPUBLIC OFFICIALS COMMENT ON SAFETY MEASURES

Kiev PRAVDA UKRAINY in Russian 15 Mar 87 p 3

[Report on Ukrainian officials' Televised Discussion, by RATAU: "Precautionary Measures Are Not Unnecessary: Physicians, Scientists and Other Specialists Answer Readers' Questions"; first paragraph is PRAVDA UKRAINY introduction]

[Text] The abundance of snow on the territory of the republic, including that in Kiev, Chernigov and Zhitomir oblasts, where some regions were subjected to radiation after the accident at the Chernobyl AES, arouses certain alarm in people. How may the consequences of the accident affect the state of the environment, particularly in the spring high water period? What precautionary measures should be taken to protect health? How does one behave during the agricultural work? This is not an empty question--the conditions and system for nutrition, use of water for drinking and of vegetables. The inhabitants of the republic write letters about this to the newspaper editors and to the republic's Gosteleradio [State Committee of the USSR Council of Ministers for Television and Radio Broadcasting]. Taking part in the regular discussion with television viewers were K.M. Sytnik, vice-president of the UkSSR Academy of Sciences, M.V. Fomenko, UkSSR minister of Education, V.M. Kozlyuk, chief of the Main Administration of the UkSSR Ministry of Health, and V.I. Gavrilyuk, deputy director of the Institute of Nuclear Research of the UkSSR Academy of Sciences.

In the course of the discussion it was noted that the radiation situation in the republic does not arouse particular anxiety. This conclusion is based on the results of numerous studies made recently. Institutions of the UkSSR Academy of Sciences, VASKhNIL [All-Union Order of Lenin Academy of Agricultural Sciences imeni V.I. Lenin], the State Agro-industrial Committee, the Ministry of Land Reclamation and Water Resources and Ministry of Housing and Municipal Services of the republic and meteorological services have been making a thorough study of the ecological situation in the period since the accident.

Rumors of the heightened radiation level which seems to have arisen as the result of damage to the filters, are groundless. Even in oblasts such as Zhitomir, Kiev and Chernigov, the radiation background is much reduced. In Kiev, for example, it approaches the characteristics noted before the accident. The focal points of harmful substances are retained only in some areas--certain forest masses in the area of the 30-kilometer zone, but they are under constant monitoring and there is no danger to the people.

In a number of letters, the readers and listeners ask: can the radiation doses received earlier affect one's health? In answering this question, the medical specialists cited the results of long-term, scientifically substantiated studies. The doses of external and internal radiation were measured in thousands of people. The overall evaluation was this: the groups of people examined do not have the level of the yearly dose of radiation accumulation, that is, the most sensitive modern instruments do not register its presence.

The forecast for the future arouses no doubts either. It is reliable, verified and supported by numerous scientific data. All this, however, does not constitute grounds for placidity, it was emphasized during the discussion. The population should adhere strictly to the elementary precautionary measures and the existing sanitary norms.

After this year's snowy winter, naturally, dangers arise: could the abundant high water possibly affect the purity of the Ukrainian rivers, including the Dnepr.

In this connection, the participants in the discussion specified, the situation is forming as follows. In the first place, according to the estimates of geologists and hydrobiologists, in the regions where radioactive fall-out was possible, no major high water is expected, and a great deal of water has already gone into the soil and evaporated. Even if one assumes the worst, however, even then, this will have no essential influence on the quality of the water, and in any case the level constituting the maximally permissible norm will not be reached. In the second place, and this, perhaps, is the main thing, the detailed, comprehensive system of monitoring created and the measures taken to protect the Dnepr basin are a reliable guarantee of the high quality of the water. Through the efforts of the scientists of the Academy of Sciences, above all the chemists, as well as of specialists from the Ministry of Land Reclamation and the Ministry of Municipal Services of the Ukraine, everything has been done to ensure the normal quality of the water. Everything has been foreseen and repeatedly weighed and verified both in the calculations of the scientists and on computers, and in models created by Ukrainian cybernetics.

How will the wells be, for example, ask the readers. What precautionary measures should be taken here?

There is no serious threat of a deterioration of the water in rivers and reservoirs, but with the arrival of spring and intensification of winds, a certain amount of dust may also enter local water sources. Therefore, well owners must be responsible for their airtight sealing. The ispolkoms of the local soviets and the regional public health services are primarily called upon to monitor the condition of the water. That is, here too, there must be adherence to the basic precautionary measures. They are in no way superfluous.

Fresh vegetables grown in greenhouses have now begun to arrive for sale. Can they, without danger, be used for food and given to children? As before, the advice here is invariable: all products are reliably monitored, from the place where the harvest was gathered to the store and the market. There are no contraindications against the use of potatoes and canned vegetables and fruits from

last year's harvest, not to mention such products as fresh vegetables and milk. Depriving oneself of the ingredients required for a nutritional diet as a rule leads to undesirable health consequences.

Questions of the studies and recreation of school children were also touched on during the discussion. The republic's minister of education again reminded us that the dates for the end of the school year, both in Kiev and on the whole on the territory of the republic differ in no way from the dates established for the entire country. There are no grounds for shifting these dates or cutting down the school year. The question of canceling the students' practical work is not worthwhile either. At the same time, the obligatory condition was mentioned--strict adherence to safety procedures and particularly production sanitation.

As for keeping children healthy during the summer vacation, as the minister specified, Kiev and other cities and oblasts in the republic have available quite a ramified network of rural and urban pioneer camps and work and recreation camps. In the capital of the republic alone this network has made it possible to improve the health of 150,000 to 180,000 school children. This year wide use is planned for the existing base. Camp preparation is now in full swing.

Questions come in: will transport for the school children be organized this year? The experience of past years showed that this form of operation was available even before. After all, many departments have their pioneer camps in the south and they, of course, take those under their patronage there. Measures are being taken to expand tourist and excursion itineraries and to intensify the use of tourist bases and other health-improvement institutions.

12151

CSO: 1800/564

USE OF SOIL IN CONTAMINATED AREA STUDIED

Kiev RABOCHAYA GAZETA in Russian 17 Mar 87 p 4

[Interview with N.P. Arkhipov, representative of the State Committee on the Use of Nuclear Power, chief of the Land Recultivation Laboratory and candidate in biological sciences, at Chernobyl, by correspondent A. Tertychnyy: "How To Heal the Land"; date of interview not given; first paragraph is RABOCHAYA GAZETA introduction]

[Text] On one of our summer trips to the 30-kilometer zone, not far from the road, we were surprised to see a tractor working in the field. What was it doing here? After all, the people have been evacuated from here and there is no agricultural work in progress.... The main attention in those days, however, was riveted on the plant unit that had malfunctioned. The answer to this problem of long standing could be obtained only now, after construction of the sarcophagus was completed. This is what N.P. Arkhipov, representative of the State Committee on the Use of Nuclear Power, chief of the Land Recultivation Laboratory and candidate in biological sciences said:

"Our group arrived in Chernobyl in May. Together with representatives of the State Agro-industrial Committee, we studied the state of the environment and made tests to determine the possibilities of returning the contaminated areas to agricultural rotation. You have just witnessed such an experiment.

Unfortunately, nature has been afflicted with considerable damage. Agricultural production has been harmed greatly, and we should all be clearly aware of this. At the same time, the actual situation is not so gloomy that talk about the 'lifeless desert', perishing nature, etc. should be repeated. Today we are convinced that a large part of this territory can return to economic activity."

[Question] Is it worth engaging in this at all? I happened to hear this opinion: they have concreted up the damaged reactor--and that is enough. It is a large country, and we can get along without the Chernobyl area land some way....

[Answer] Opinions of this sort can in general be understood. But as a citizen and a scientist, I cannot agree with them. Having permitted the accident at the AES and contaminated the land, we find ourselves in debt to nature and our descendants. That is why everything possible should be done to have the fewest traces of the accident remain.

The potentials for this are quite good. We have the knowledge and the means of realizing them, and we have the will of the people, who want to help nature, which has suffered.

[Question] On what do you base your confidence?

[Answer] During the period after the accident, atmospheric contamination from the destroyed unit was stopped completely due to its reliable confinement. Decontamination work was carried out on a broad scale: as is known, 500 population centers, almost 60,000 apartment houses and other buildings and structures have already been treated. The natural decay of the radioactive elements that entered the soil and their dispersal are continuing. Finally, special chemical treatment of the agricultural land was developed everywhere.

As a result, contamination of the biological environment was reduced by a factor of approximately 20-30. This indicator also gives reason to affirm: after sanitation-normalizing work has been carried out on a large part of the territory of the 30-kilometer zone, high-quality standardized agricultural products can be obtained. That is, the level of radioactive element content in it will not exceed the sanitary norms established by law.

[Question] What do you mean by sanitation-normalizing work?

[Answer] This consists of special agro-technical operations, which are recommended, depending on the soil-climatic conditions, the composition and form of the radionuclides and other specific circumstances. In our case the task is made somewhat easier by the fact that the radionuclides discharged are in a form practically insoluble in water.

In other words, they have little mobility when distributed along the biological chain: soil-plants-animals-humans. Therefore, a large part of the nuclides present a danger only until they are on the surface and can be transported by the wind along with the dust.

In order to render this part of the nuclides harmless, they are sufficiently plowed into the soil, where they will be in a bonded state and will decay naturally. Applying any bonding agent to a field before plowing will help to increase the reliability of this operation.

At first, specialists had serious doubts about the effectiveness of this procedure on loessial soils. We succeeded, however, in making these experiments and obtained a green mass harvest. It proved, on the average, to be 100-fold purer than on adjacent sections which could be considered as control.

The depth of the plowing on each field depends on the degree of contamination. We established that, for the basic mass of the areas, ordinary plowing was sufficient. Approximately 10-15 percent of the territory of the 30-kilometer zone requires special implements: there the upper layer must be plowed to a depth of 60-70 centimeters--below the plow bottom.

[Question] Among the radionuclides, however, there are some that are highly mobile....

[Answer] The long-lived isotopes of strontium and cesium arouse the main concern today. As compared with the others, there are not many of them, but these are very active elements--they easily migrate from the soil, and are firmly implanted in the organism. Consequently, there are few of them to plow, and it is still desirable to combine them at the chemical level. Therefore, it is recommended that the sections contaminated with these isotopes be treated with lime, zeolites or similar substances.

Lime contains calcium, which is close to strontium in its chemical properties. They are equally absorbed by plants. This means that strontium's place in the plants will be occupied by its harmless counterpart--it is precisely this way that calcium forces the radionuclides out of participation in the biological chain.

Zeolites are able to bind the cesium. Its atoms seem to be drawn into a foreign crystalline lattice and therefore lose mobility and do not enter the plants' root system. Other sorbents, including synthetic ones, can play a similar role.

[Question] Will such measures be sufficient in all cases?

[Answer] Calculations and experiments show: for most of the areas these procedures will be sufficiently effective, and they must be used even in the first season. There are other methods of treating the soil, however, which can be used parallel with chemical reclamation or after it. One of them is raising the yield. Observations have shown: the higher the yield, the less the radionuclide content in it.

From this comes the conclusion: all the known measures of intensifying agriculture automatically reduce the isotope content in the biomass.

[Question] All the same, will the radionuclide content in these plants be more than in ordinary ones? How, then, can they be used?

[Answer] Yes, the nuclide content here will be heightened for some time. We must not forget this. Strict radiation-monitoring control is required, in order to have precise information. It is expected, however, that the level of radionuclides will remain mainly within the limits of the health norms. Therefore, humans can use the plants without any harm, although, just to be sure, in these cases they sometimes feed the livestock this harvest, and the milk is processed into oil. This partially explains the intention to change the structure of future farms in the zone, by restructuring them for fodder production and livestock breeding.

[Question] All the designated measures require the appropriate equipment, technology and additional materials....

[Answer] The main thing is a high standard of agriculture, technological discipline and strict adherence to sanitation requirements. This is particularly important in the first season, when the radionuclides will to a considerable extent remain on the surface.

[Question] You said, "in the first season." When does it arrive?

[Answer] The levels of radioactivity and the tendencies for their reduction make it possible to begin agricultural work as early as the spring of this year, as a minimum, on half of the territory of the 30-kilometer zone. It must be emphasized, however: we are evaluating the potential only from the scientific standpoint. How quickly the social, economic, technical and psychological aspects of the problem will be solved--this is another question. I can only remind you of the known facts. The inhabitants evacuated from two villages have already returned to their homes, as early as last summer. Now, as has been reported in the press, 14 villages are prepared to return from evacuation.

12151

CSO: 1800/564

UKRAINIAN WRITER LOOKS BACK AT CHERNOBYL EVENTS

PM081320 Moscow LITERATURNAYA GAZETA in Russian 8 Jul 87 p 12

[Report by special correspondent Yuriy Shcherbak datelined Chernobyl AES, Pripyat City, and Narodichskiy Rayon in Zhitomir Oblast: "Chernobyl: To Know and To Remember"--first two paragraphs are editorial introduction]

[Text] The Ukrainian writer and Doctor of Medical Sciences Yu. Shcherbak was the author of a series of items on events at Chernobyl published in LITERATURNAYA GAZETA last year. The first item--"The Pain and the Courage"--appeared on 21 May 1986 under the rubric "Eyewitness Account."

Today LITERATURNAYA GAZETA special correspondent Yu. Shcherbak returns to the subject of Chernobyl, reflecting on the events of the past year, what that year has taught us all, and what will remain in our memories.

It is 25 April 1987. A cold, overcast day. Low clouds hang over the Chernobyl AES. In a few hours' time it will be exactly a year since the accident which went down in the history of the 20th century. We are standing 10 meters from the place where, at that time, the explosions rang out that destroyed the nuclear reactor and brought our people the pain of losses and sufferings whose echoes were repeated many times over, throughout the world, by the mass media. These explosions destroyed forever one more of mankind's illusions and put an end to the naive faith in our superiority and power over the monstrous atomic forces. This blind faith came tumbling down along with the ceiling of the fourth unit. It was here, looking at the ruins, measuring the radiation levels, recoiling in horror and at first not believing his eyes, that mankind became aware with penetrating clarity, not only with his mind but with his heart: It is entirely possible for forces capable of destroying life on earth to go out of control.

From here, from this tremendous height (we are at the 65-meter mark), a view opens up of the surrounding fields, not yet touched by spring green, and the lifeless apartment blocks of Pripyat--a beautiful city now surrounded by a thick barbed-wire fence. We are standing not far from a red-and-white striped chimney--a vertical line drawn between the third and fourth units at the Chernobyl AES, a warning landmark for the helicopter pilots who flew here in the spring of 1986 to "bomb" the reactor. In the wall next to the door by which we have stopped, openings can be seen. Now they are covered with lead,

like pillbox embrasures no longer needed for firing. But only a few months ago they were very necessary: Through the openings you could look into the chaos of the fourth unit and carry out hasty measurements. A matter of seconds was allowed for this. But today you can go out onto the roof of the sarcophagus to work. Although even now the small red dosimeter in my hand chirps incessantly, causing my companion, the Kiev physicist Yuriy Nikolayevich Kozyrev, only to smile ironically: "Nightingales, nightingales, do not trouble the soldiers..." Today's level is child's play compared to what it was in the fall, so Kozyrev jokingly offers to give me a certificate saying that I am the first writer in the world to have been to such an interesting point at the Chernobyl AES.

These jokes and facetious remarks, which conceal our agitation, do not stop us from seeing clearly what it was like here before. How Aleksandr Aleksandrovich Klyuchnikov, deputy director of the Ukrainian SSR Academy of Sciences Nuclear Research Institute and one of the creators of the "Shater" automated system for continuous monitoring of the condition of the fourth reactor, came out onto the snow-covered roof of the sarcophagus in fierce February frost and wind, at the risk of slipping. And at first he had in his hands not a highly complex instrument, but an ordinary spade: He had to dig a path through the snow on the footbridge so that he could work safely. Then A. Klyuchnikov and his colleague lowered the first instrument into the roof hatch, and the young engineer Sasha Doroshkevich agitatedly shoveled away the snow with his hands, looking for the cables: The contacts had to be checked.

They lead me through a dreamlike maze of halls and rooms, past big ventilation pipes of polyvinyl film. Stepping across a tangle of cables, we walk along the long corridor 301--the very same through which, on that tragic night in April 1986, the work shifts from the first and second units hastened to the assistance of the fourth. Then, it was a glass gallery, today it is a passageway thickly lined with lead sheet and covered in bright linoleum, reminiscent of a submarine. In one hall my guide takes me to the wall where a stainless steel plaque gleams: Valeriy Khodemchuk, operator. Date of birth--date of death.

Alarm pierces me. We stand in mourning beside the new plaque--it was only put up yesterday. He is here. Behind that wall. Where the fourth reactor is.

At last we come into a room where physicists are sitting drinking coffee. Vladimir Nikolayevich Shcherbin, chief designer at the Ukrainian SSR Academy of Sciences Nuclear Research Institute Special Design and Technological Bureau, introduces me to the brain of the "Shater" diagnostic system. Computers stand in formation, collecting numerous data from the fourth reactor. S. Iyevlev switches on a color VDU. A vivid diagram of the sensors which surround the reactor on all sides appears. The sensors are like phonendoscopes fixed to a seriously ill patient's back. They collect information in a number of parameters, such as the temperature of the reactor, the intensity of the heat flow, gamma radiation, and so forth. The computer reckons up the sensor data in a few minutes, and every 2 hours a printout of

data is ready, which are then fed into the machine's memory. Up-to-the-minute information can be obtained at any time.

It all began in those hot days of May 1986, when A. Klyuchnikov, together with his friend Valeriy Ivanovich Shakhovtsev, also a deputy director, but of another Kiev academy institution--the Physics Institute, took part in the work of inserting the first sensors beneath the base of the reactor. At that time it was still not clear how real was the threat of the base melting and the "core" ["korium"]--the molten reactor material--escaping. The so-called "China syndrome" (from the title of a Hollywood movie about an imaginary AES accident), when the molten core enters the soil and ground water, could arise. The very idea of this horrified experts, who knew very well what that meant. That is why they were so reticent in the first days following the accident, that is why their assessments of the situation at that time were so restrained and vague. They had a responsibility not only to the Ukraine and Belorussia, but to the whole world.

But the critical situation gave rise not to impotence, but on the contrary, to a stubborn determination to combat disaster, a desire to establish the truth: What is really happening to the reactor, which had surrounded itself with almost insurmountable fields of ultrahigh radiation? At a session of the government commission it was decided to penetrate the so-called "bubbler"--a complex system of concrete installations and compartments under the reactor--with a view to installing sensors. Before the accident the bubbler contained water, which was pumped out for fear of a steam explosion. Now these gloomy chambers were empty, with a terrible "glow." Moscow and Kiev physicists together prepared the apparatus.

And the day came when the expedition set off in the direction of the damaged reactor, traversing the dangerous sections of corridor 301 at high speed (V. Shakhovtsev's tall, athletic figure came in useful), headed by V. A. Pryanishnikov, an employee of the Chernobyl AES who knew every twist and turn here. V. Shakhovtsev made his way through a gap in the concrete into the dark "kingdom" below the reactor. It was hot, the sweat poured off him, his protective suit was wet through (as if on purpose, no mineral water had been brought to the station that day, and they had to drink from a faucet in the third unit), the radiation was no joke, but it was necessary to determine where and how to position the sensors. Valeriy Ivanovich worked on, trying not to think that the bulk of the reactor, weighing many tons, was above him. Then the seven physicists (I was about to say the Magnificent Seven) dragged heavy bunches of cable to the bubbler--and it was no longer possible to run through corridor 301. They marched like barge-haulers, in a single chain, linked by cable... The instruments were installed on the BSHCHU-3 (the modular control board of the third reactor). Holding their breath, they awaited the first signals. Academician Ye. P. Velikhov and Moscow scientists V. D. Pismennyy and B. G. Pologikh, who had come to the BSHCHU-3, recorded the instrument readings and hurriedly carried out the first preliminary calculations... Only after receiving these data were the physicists able to heave a sign of relief: There is no danger of the "China syndrome."

The sensors installed during those days are still working reliably. They became the first components of the "Shater" diagnostic system. It incorporates the invaluable experience, won by hard work, of a whole year of operations to eliminate the consequences of the accident (it would have been better if this experience had not existed at all, but there is no help for it--it exists, and it could still come in useful somewhere, some day). The experience exists, but there is also a painful awareness that the atomic jinn released on 26 April 1986, although vanquished, has not yet been driven back, and is not likely to be banished utterly very soon. Its searing traces remain in living nature (to this day special subunits are still felling and sawing up the remnants of the notorious "red forest" not far from the AES) and in people's hearts.

This we must remember, this we must know.

The ecological, moral, and psychological situation which has emerged around the Chernobyl AES is still far from normal and poses a number of new problems. For instance, what will happen to Pripyat? Does this lovely city have a future? Numbering some 50,000 inhabitants, it emptied at a stroke, because of the level of radiation, which was dangerous to people's health and life. Last fall I saw decontamination operations taking place here. In the language of technicians, a struggle was under way for the city's viability. What next?

I arrived in Pripyat with Aleksandr Yuryevich Esaulov, deputy chairman of the gorispolkom, and Mariya Vladimirovna Protsenko, the city's chief architect. In the course of their duties they dash here from Chernobyl fairly often. The square in front of the ispolkom is covered with white river sand--a completely deserted sandbank. Our "atomic" rubber shoes left footprints on it as if we were walking across an unknown, deserted planet... Mariya Vladimirovna wept when she told me how she, who had invested so much effort and talent in the city's amenities, had had to sketch with her own hand a plan of the fencing of Pripyat with lines of barbed wire. Accompanied by militia workers, we entered apartment block No 13 in Heroes of Stalingrad Street, the block where Protsenko and her husband and two children lived before the accident. A spectacle perhaps more terrible than the sarcophagus confronted us. The musty smell of neglect hung in the house, which had grown cold over the winter. The heating had been switched on and off, and as a result in a number of apartments the radiators had burst and water flooded the floors. On the fifth-floor landing we found a color television which someone, for some reason, had put outside the apartment. The doors of some of the apartments were wide open. Dresses, books, kitchen utensils, and toys stood in heaps on the floor. In one room there was a child's potty, the doors of the prestigious foreign "wall unit" were flung open, many of the chandeliers had been cut down. The militia workers explained that between July of last year and April of this year there had been several visits by the city's inhabitants. They were allowed a short time to collect clothing, valuables, and family heirlooms. People hurried and scattered things around. Why were the apartment doors left open? Apparently because people were leaving here forever. True, during these visits certain people who coveted other people's property had looked in on their neighbors.

In confidential conversations with me the inhabitants of Pripyat expressed fears that theft had not passed them by: During their visits, many had not found all their cameras, tape recorders, or radio sets. Such a thing to happen, in a defenseless city and the surrounding villages... What could be more sickening?!

Vitaliy Nikolayevich Vovchenko, a people's judge in Pripyat City, told me about a criminal case brought against some young rascals. They were arrested last July with stolen goods. One of them, the handsome, mustachioed, 26-year-old Lakisov, proved to be a recidivist. He is crazy about motorcycles, and his two previous convictions involved the theft of motorcycles. Lakisov and his friends traveled about the zone on a stolen motorcycle, "looted" a few more motorcycles in passing, and, intoxicated with stupidity and lack of restraint, shot at cats and dogs in an empty village until they attracted the attention of the militia patrol. On the eve of the May Day celebrations the trial took place and the criminals got what they deserved.

However, these people were isolated cases, and I am sure that even if they managed to evade punishment, they cannot evade trial by conscience and the vengeance of fate. Their stolen goods will not bring them happiness.

But the majority of those who went into the zone risked their health for the sake of the cause. I will not forget the radiation burn on Yura Kozyrev's hand: At the most dangerous places in the AES he picked out samples for study at the specialized laboratory of the Ukrainian SSR Academy of Sciences that has been set up in Chernobyl. And he was not alone in taking risks! Much has been written in the press about the heroic labor of the builders of the sarcophagus, the servicemen, the dosimeter operators, but there have been hardly any reports on the work of the Pripyat Gorispolkom. Yet gorispolkom chairman Aleksandr Afanasyevich Veselovskiy, his deputy A. Yu. Esaulov, and also A. G. Pukhlyak and M. V. Protsenko and other ispolkom members traveled here constantly throughout the past year on official business. Their city does not exist as a social unit, but soviet power exists and operates there. The ispolkom members are tackling thousands of seemingly very simple matters involving the issuing of permits to visit apartments, the payment of compensation to the inhabitants (for a family of four, the state pays R10,000), the consideration of questions involving vehicles, garages, and boats (compensation is also offered for cars left in the zone, but what to do about garages has yet to be decided), the drawing up of lists of various kinds, the settling of numerous disputes and claims...

How many human destinies have passed before then over the year, what twists and turns they have encountered! Characters were tested as they are in war, and sometimes unstable families disintegrated and formal human ties which lacked profound moral foundation were broken off abruptly. At the same time there was evidence of true love, loyalty, selflessness, and disinterest. Many of the people of Pripyat were only brought closer together by the grave trials, and formed real friendship that will now be lifelong. Not for nothing did many travel to Moscow on the anniversary of the accident, 26 April, to honor the remains of their dead comrades at the cemetery.

Incidentally, the concern of certain officials about such remembrances is hardly justified: Will they not introduce a gloomy note into the optimistic symphony of life, they ask? I do not think that either remembrance ceremonies or meetings of fellow countrymen have anything bad in them, they should be legitimized. The present generation of people from Prip'yat (and not only the inhabitants of that city) and their children and grandchildren should know and remember what happened to them, or rather, to all of us on that warm April night in 1986.

Know and remember!

I very much regret that during the Soviet Literature Festival held in April of this year in the Ukraine I did not manage to bring here a large group of writers, guests from all over the country. There were plans for this, originally... I think an international writers' forum in defense of peace should definitely be held in Kiev. Who, if not writers, should see the dead city and the empty village so as to be permeated to the very core with concern for mankind's future, which will be far more terrible in the event of the outbreak of nuclear war?!

During the Soviet Literature Festival I was able to visit Narodichskiy Rayon in Zhitomir Oblast together with the Tajik writer Gulnazar Keldiyev and the Zhitomir poet Valentin Grabovskiy. The point is that this rayon, along with Poleskiy and Ivankovskiy Rayons in Kiev Oblast, is among those worst affected by the consequences of the accident. The inhabitants of several villages on the Belorussian border had to be resettled elsewhere.

Anatoliy Aleksandrovich Melnik, first secretary of Narodichskiy party raykom; Ivan Petrovich Makarenko, rayon civil defense chief of staff, Vasiliy Ivanovich Voytyuk, chairman of the kolkhoz named for Petrovskiy, and many others I met with during those days told me about the complex situation in which the rayon found itself. Unfortunately, for some reason the central press writes very little about the day-to-day life of the population of this rayon, or, indeed, the other affected rayons, although life does not run smoothly here. Yes, new apartment blocks have been built for the resettled people, they have been provided with everything they need, a supply of dairy products has been organized (many people handed over their own cows), and plans for the production of agricultural output have been amended--for instance, sheepraising has had to be abandoned: The wool "collects" too many radionuclides. All this has been done.

However, unresolved problems exist, and, in fact, are becoming pressing. Take, for instance, the almost complete absence of tractors with sealed cabs. How can a machine operator spend all day sitting in an open cab, swallowing dust with some--even a minimal--radionuclide content? Ash is not without danger to health, so it is necessary urgently to supply all the rayon's villages with gas. It must also be said frankly that the working population have begun to leave here. There are not enough doctors and teachers everywhere. In these circumstances the housing construction front is particularly important. It is necessary to build comfortable houses with hot

and cold water, to asphalt the roads, and to develop the sphere of social, cultural, and consumer facilities. Here the forces of Zhitomir Oblast alone are not enough, although it is helping Narodichi in every way it can...

And with one voice all the people I spoke with complained about the dominion of all kinds of commissions, checks, and demands for reports. These have literally tormented the rayon, and for the most part they yield no benefits for the cause. Alas, even the forces of the atom cannot tackle bureaucracy.

...I have tried to show a few slices of Chernobyl life as it is a year after the accident. In reality this topic is infinite, and we should know and remember every one of its ins and outs. Everything possible must be done to ensure that the half-life of the memory, the half-life of forgetfulness, does not operate. After all, the lessons of Chernobyl must not remain solely in history archives, in the past. They are vitally important to us for building the future too.

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CHERNOBYL AREA SCENE DESCRIBED ONE YEAR LATER

PM161451 Moscow MOSCOW NEWS in English No 28, 12 Jul 87 p 11

[Article by Lev Voskresenskiy: "The Zone"; first four paragraphs are editorial introduction]

[Text] The Chernobyl nuclear accident is going to be remembered a long time. The exploded power-generating unit has been sealed, the radiation leak stopped and the situation around the plant is improving. But it will take years to decontaminate the area, years of research and monitoring of the environment. What is required is more accurate knowledge and a complete assurance of human safety. Our correspondent Lev Voskresenskiy went to Chernobyl to see what was happening in the 30-kilometre security zone.

The accident has taught us many lessons, and arrangements have promptly been made for stricter supervision of the equipment and better instruction of the staff. The colossal work to decontaminate the area is continuing and criteria for the siting of future nuclear power plants have been made more strict.

A trial has opened in Chernobyl of those charged with being responsible for the disaster.

Our special correspondent Andrey Pralnikov was among the first journalists to visit the wrecked reactor last May. He is attending the trial and will cover the proceedings for MN.

After I went round the Chernobyl nuclear power plant I swore that whatever happens I will write only about things I've seen myself, that I'm absolutely positive about, and only rely on opinions and conclusions of people of unquestionable competence.

You might say that this goes without saying. Who would want to break the obvious rule? This is right of course, but unfortunately on the night of April 26, 1986, rules were broken at the Chernobyl nuclear plant which gave the tiny Ukrainian town a bad name.

On my trip there I was interested in finding out about whether it is safe to do any farming in the Ukraine, especially in the areas closest to the scene of the disaster. In simple terms, I wanted to know where it is really safe to

live, till land, graze cattle, walk in the forest, swim in the river or just lie on the grass without fearing the consequences of the accident that happened 1 year ago.

I was shown a detailed map indicating the areas contaminated with radioisotopes, primarily of cesium which has a long decay period. I read documents compiled by authoritative bodies in Moscow and Kiev, talked to administrators (USSR and Ukrainian Republic ministers), and to highly competent radiologists.

Do the official reports tend to smooth over last year's and today's situation after the Chernobyl accident? Or are the more sceptical experts perhaps laying it on thick? There is hardly anyone, even among prominent scientists, who can claim to be alone in knowing the whole truth. The Chernobyl accident is a case where one time--scores or hundreds of years--can tell if recommendations and theories are true or false.

Discussions among nonprofessionals can be ignored, but it is very good that real experts discuss matters publicly. It looks like the tendency to silence persistent opponents is gradually waning. Millions of viewers watched recently on Central Television a Ukrainian author who doubted official statements about Chernobyl--saying something like this: "We are being assured that the situation is absolutely normal and well-nigh better than it was before the accident at unit four of the Chernobyl nuclear plant. Is there really no room for improvement? Let's blow up one more unit to make the situation really splendid!" I don't expect this sombre humour to go down well with officials at the Ministry of Public Health or at the State Committee for the Utilization of Atomic Energy. But let them be patient and convincing and people will believe them. The current doubts or even mistrust, as well as the various rumours and conjectures, are a natural result of the long absence of openness, the seamy side of it. We have to go through that.

What is important today is that doubts are voiced out loud, not in whispers, as we can see. Had people in all scientific centres spoken and written the same (as in the past) monotonous, cliché-ridden, uniform, and long-familiar texts, that would be really alarming, a sign of social immunity, of stagnation.

Fear makes mountains out of molehills. Radiologist Alexey Povolyaev of the USSR Agroprom, who went on assignments to the most troubled spots in the Chernobyl area, said that some people are cautious to the extent that they are fearful of almost everything and make other people afraid, too. Such people look with suspicion at every apple brought from the Ukraine.

That is why I'd like to talk about my tasting of tomatoes grown in the vicinity of the "sarcophagus" which seals the damaged generating unit of the nuclear plant.

Today, Pripyat is a ghost town. There is sand at the sides of the asphalted roads and on the paths: the upper soil has been scraped off, carried away and

buried. All the outer walls and balconies of buildings and their roofs have been washed with powerful jets of water. Street lamps are on at night, but you can't see any illuminated windows. There is a volleyball net in the pine grove outside a fire station. The last time they played a game there was on the fine evening of April 25, 1986, shortly before the fire company on duty rushed to the burning station at 1:30 am, 7 minutes after the explosion. Since then (and for a long time to come, perhaps) there have been no volleyball games. There's silence. Wind hums in the pine-tree tops. Birds are singing.

At night Pripyat is deserted, save, of course, for the guards at the gate and the emergency servicemen on duty. This is unlike Chernobyl, where there are no people around in the daytime either. In the deserted town there is one feature that gladdens the eye: the greenhouse on its outskirts. Here something is happening. The plants grown there on 2 hectares are not for consumption, though. They are being grown to see which of them are best suited for being grown on the lawns and in the public gardens of the town. They range from grasses to flowering fuchsias, peas, raspberries, strawberries, cucumbers, and tomatoes.

My guide was Stepan Lyashchenko. He comes from Kiev and is a section head of the agroprom in the Ukraine responsible for setting up this greenhouse. He picked a plateful of tomatoes and berries, washed them under the tap and offered me them as a treat.

I knew the sale of anything grown in Chernobyl region was officially banned in Kiev, so I asked: "Is it safe?"

"Quite," said Lyashchenko as he took a bite out of a tomato, "so long as you wash what you are going to eat well, and your hands of course. But I wouldn't recommend it out-of-doors, especially if there's wind and dust."

The section he is in charge of was set up at the Agroprom of the Ukraine after the accident. It coordinates efforts and research aimed at eliminating the aftermath of the accident. Working under him are experts in different fields, including radiology. So I had few qualms as I followed his example.

Well, I found that the tomatoes and berries looked, tasted, and smelled as they should. But, according to idle rumours which are rife, Chernobyl's "irradiated" vegetable gardens and orchards produce apples and tomatoes the size of a human head; the wheat stands as tall as 3 metres and the fields are infested by rodents. Also, a rumour is that vodka in Chernobyl is distributed free as the most effective antidote to radiation.

All this is idle talk. Scientists have so far not registered any visible changes, either in animals or plants. (So far is a very important reservation.) In Chernobyl and in the villages around gardens are in blossom, as they usually are at this time of year. Old-timers think that there are more crows around. Mosquitoes are a big nuisance. In one courtyard in Chernobyl I saw a stork that returned to its nest there. Crops were not

harvested in the zone last autumn. Last year's maize plantations are overgrown with old weeds. The wheat fields are green: the grain shed last autumn spent the winter in the snow and sprouted in spring. Experts will study the results. As for vodka, Chernobyl is dry: you've got to keep a sober mind in all respects, both on and off duty.

There's still a lot to be done in the zone and at the plant itself. According to data of May this year, nearly one third of the rooms and a section of the roof of the third generating unit next to the "sarcophagus" have still to be decontaminated. The asphalted area at the front of the "sarcophagus" is free from contamination. The meter applied to the soles of my shoes at the radiation-monitoring station read 0.04-0.05 milli-roentgen per hour (mR/h), while the radiation level in the air was 0.01 mR/h. A year ago the level of radiation near the nuclear plant exceeded 100 mR/h. In Kiev it reached 0.5-0.8, and at the moment it is 0.03 in the city's main Kreshchatik Street, which is normal. Inside the danger zone, along the roads, are signs warning that the areas around them are contaminated. So you can't move a step off the roads. It will take time and considerable effort to decontaminate all the roads, fields, and woods. It is an uphill task to cut down and bury what they call "rusty wood"--a big groove of pine trees killed by radiation outside the nuclear plant. It is also not easy to prevent it from catching fire.

So there is a lot to be done and there is always a measure of risk. Let me put it straight: the emergency period is over. As a rule, no extraordinary effort or self-sacrifice is required in the zone. You don't have to go to extreme lengths. Instead you've got to work strictly according to the safety regulations.

I also think that people in Chernobyl, as elsewhere in this country for that matter, should work efficiently, without haste or stress, and never do their work in a slipshod manner. I have to write about such things because work is often rushed and badly done here, even today, also because some people would like to create quickly the semblance of a normal situation, and even intend to return the populations of several previous inhabited centres inside the zone (its borders are being changed in accordance with changes in the radiation situation), which is a doubtful exercise both from the moral and economic point of view.

When in Chernobyl, you become especially aware of the fact that this small part of the Kiev Region, circled in red on the map, and even the tiny area inside it marked with black stripes (the nuclear plant and Pripyat), is not the greatest cause for worry on earth. What causes the most worry is incompetence, slipshod work, eyewash, the breaking of elementary rules, rumours and idle gossip, including propaganda noises from here and abroad. This marks the really dangerous zone whose borders, unfortunately, you cannot define on any map.

As regard safety limits in the area of the Chernobyl nuclear plant, I'll end my report with this piece of information, and it is up to the reader to judge of its reliability, bearing in mind what I have said above.

If you have not got a map of the Ukraine handy, place a large coin on the palm of your hand, put a smaller coin on top of the big one and a pea on top of the smaller one. The palm is the size of the Ukraine, the bigger coin is the combined size of Kiev, Zhitomir, and Chernigov administrative regions, the smaller coin is the area of controlled agricultural production, and the pea is the Chernobyl zone.

The Chernobyl zone: No farming is done within it, and fire safety and decontamination work is in progress. The USSR Agroprom thinks that the zone should be given the status of a state reserve, but no formal decision has been taken although it's high time.

The area of controlled agricultural production: Chernobyl and Poleskoye districts in the Kiev region and parts of Ovruch and Narodichi districts in the Zhitomir Region have been switched to controlled agricultural production. A set of obligatory measures is being taken there to exclude radioactive contamination of food produced by cooperative farms and on private plots. As a matter of fact, norms of radiation safety in force in the USSR are in line with the international norms: 1×10 to the power minus 8 curie per 1 litre of milk, and 1.6×10 to the power minus 8 curie per kilo of other types of food which are equal to 370 and 600 becquerel units. These correspond with the EEC's safety norms.

Three out of the 25 administrative regions in the Ukraine receive careful attention but do not face restrictions or bans regarding farming or day-to-day life. There are recommendations made as to which crops are preferable in Kiev, Zhitomir, and Chernigov regions this year, but they are not forced.

Elsewhere around the Ukraine no special measures have been envisaged. Experts from the ministries of public health of the USSR and the Ukraine say that outside the zone, and in the area of controlled agricultural production, the situation is the same as it was before the Chernobyl accident.

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BRIEFS

KIEV RADIATION 'COMPLETELY STABILIZED'--The Ukrainian Ministry of Health has reported that the radiation situation in Kiev and its environs has completely stabilized. Drinking water fully corresponds to health and hygiene requirements. For preventative reasons, strict radiometric monitoring of fruit and vegetables offered for sale has been retained. However, no cases of radioactive pollution have been discovered. [Text] [Moscow Domestic Service in Russian 0900 GMT 19 Jun 87] /9599

KIEV DAIRY PRODUCTS' RESTRICTIONS LIFTED--Kiev--The last trade restrictions imposed at the kolkhoz markets because of the accident at the Chernobyl AES have been lifted. From now on home-made curd cheese, sour milk, and butter produced on kolkhoz members' personal plots are permitted to be sold at all Kiev's markets. "This permission should not, however, be interpreted as the introduction of uncontrolled sales of dairy products in general," V. Shestakov, Kiev chief state health physician, told your correspondent. "As before the Chernobyl events, all dairy products, without exception, undergo medical checks, including a compulsory radioactivity check. For this purpose all the city's markets are equipped with special apparatus. These measures are dictated not so much by the condition of the natural environment and food products, as by the ordinary requirements of public health." [Text] [Moscow IZVESTIYA in Russian 18 Jul 87 Morning Edition p 2] /9599

KIEV LIFTS DOSIMETRIC CONTROL--The city council in the Ukrainian capital, Kiev, has decided to lift permanent radiometric [as heard] control from the city markets. The procedure was introduced following the accident at the Chernobyl nuclear power plant. Doctor Mikhail Shandala, who heads the Institute of Environmental Physiology, told a Radio Moscow correspondent that the control was lifted after radiometric posts had registered contamination of market foods for a long period of time. Dr Shandala pointed out this was the best evidence of the safe radioactivity situation in Kiev and the entire republic. He also said no agricultural work was underway in the 30 km zone around the Chernobyl power plant. [Text] [Moscow World Service in English 1500 GMT 9 Jul 87] /9599

CSO: 1800/571

POLITICAL

'TRIAL OF THOSE GUILTY' AT CHERNOBYL CONTINUES

LD150903 Moscow TASS International Service in Russian 0818 GMT 15 Jul 87

[Text] Moscow, 15 Jul (TASS)--Experts say that numerous violations of the rules on the use of equipment during the period when an experiment was being carried out are the main causes which led directly to the Chernobyl AES accident. In a report from the Chernobyl-held trial of those guilty of this incident the MOSKOVSKIYE NOVOSTI daily quoted the conclusion of the technical commission of experts, which states that the experiment that commenced prior to the accident was a continuation of a series of similar and unsuccessful research projects. Nor was the experiment prepared in any serious manner. People with low qualifications were entrusted with the task of carrying it out.

The newspaper reports that in the dock are: Viktor Bryukhanov, former director of the AES; Nikolay Fomin, chief engineer; Anatoliy Dyatlov, deputy chief engineer; and three other AES workers. They bear responsibility for the breach of safety regulations governing potentially explosives enterprises that led to humans becoming victims and other serious consequences, and also for the fact that the measures set out in the plan for evacuation were not taken (such plans exist for every AES and for various degrees of accidents). Furthermore, the situation was aggravated by the lack of openness concerning the radiation situation. The "classified nature" [zakrytost] of subjects concerning the state of affairs in nuclear power engineering was one of the reasons for the accident in Chernobyl, the paper writes.

On being asked by the judge of the proceedings whether the defendants pleaded guilty, three of them replied that they pleaded guilty in part, and three of them refused to plead guilty, MOSKOVSKIYE NOVOSTI reports. The trial continues.

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CSO: 1800/570

AGRICULTURE OFFICIAL INTERVIEWED ON SPRING SOWING

Minsk SELSKAYA GAZETA in Russian 18 April 87 p 3

[Interview with Belorussian SSR Gosagproprom Deputy Chairman I. N. Nikitchenko by BELTA correspondent Ye. Gorelik: "Spring Sowing on Wounded Fields: An Area of Special Attention"; date and place not specified; first three paragraphs are source introduction]

[Text] April is decisively asserting a eternal truth: no matter how hard it may try, winter lacks the strength to prevent the arrival of spring. Each day, the sun is shining more generously and the fields are storing up the abundant warmth, preparing to receive the seeds of the future harvest.

Spring is also rushing into the regions in which the Chernobyl calamity has left its bitter mark. A year of complicated, intensive work has passed, a year of difficult search for answers to many questions, including this one: What will the sowing be like on the lands which have been contaminated by radioactive isotopes -- should the "sick" fields be planted, or is it better to take them out of circulation, and with what and how should the soil be treated in order to more quickly restore its health?

Our conversation partner is the deputy chairman of the Belorussian SSR State Committee for the Agro-Industrial Complex (Belorussian SSR Gosagroprom), corresponding member of the Belorussian SSR Academy of Sciences, Doctor of Agricultural Sciences, Professor I. N. Nikitchenko.

[SELSKAYA GAZETA] Explain to us please, Ivan Nikolayevich, what are the special features of agricultural production in these rayons?

[Nikitchenko] There are many of them, but all serve one goal -- to obtain if not absolutely pure products, then at least products with a minimum content of radioactive substances. You know, surely, that now, after almost a year since the accident, during which the short-lived isotopes have disintegrated, the radiation danger to humans basically lies hidden in contaminated food products. Therefore, it is necessary to isolate the radionuclides that have found their way into the soil from the roots of plants, to prevent their transfer to the harvest.

How to do this? Recommendations set forth in published and widely known works by Soviet researchers and by scientists from Sweden, the FRG, the US, and other countries, suggest several paths. The first of these, and we actively employed it last fall, is the deep plowing of fields, in which the surface layer ends up below the basic root system zone and remains, to use the terminology of the football player, "out of the game" until the total, natural disintegration of the isotopes it contains.

Another effective method of reducing the migration of radioactive substances into vegetation is "the fertilization of soils with lime, with powdered dolomite and the application of higher doses of organic and mineral fertilizers, and also of special loams -- zeolites, which increase the absorbing, the absorbent qualities of soils. They block, take molecules of strontium or cesium prisoner, as it were, and retard their movement into plant roots. Thousands of tons of loam will be shipped to the afflicted areas from Georgia and from the Ukraine and will first of all be applied under vegetable crops, and also on private garden plots.

Regarding the application of lime, this was already done back in the fall on the larger part of the area. This work will be completed in the very near future, including in areas where it is necessary to repeat this agricultural approach.

A third path is to sharply increase agricultural crop yields by introducing intensive production technologies. In this case, the radionuclids are "diluted", as it were, within the large mass of the harvest and are reduced in individual product units.

[SELSKAYA GAZETA] During the past year, as is known, detailed studies of all potential contaminated regions have been made by scientists, thousands of water and soil samples have been taken, and special maps have been prepared. In a word, the situation has been sufficiently studied and is being continuously checked. Is the area large, where "special", nontraditional agriculture is required?

[Nikitchenko] In a number of rayons in Gomel and Mogilev oblasts, large areas of agricultural land have been contaminated by radionuclides. At the same time, the density of contamination varies greatly, although it remains in all areas somewhat below permissible level limits. This also determines the character of the measures that are being taken to ensure that operations will be safe and that usable products are obtained.

For example, in the afflicted rayons, vegetable-growing have been completely halted and the profile of certain farms has been changed. Let us say that collective and state farms which have large areas under crops that require the use of manual labor will be assigned only "mechanized" crops -- grains, potatoes, flax. The planting of perennial grasses and feed crops is being expanded everywhere.

Depending upon concentrations of cesium in the soils even within the boundaries of a single farm, it has been recommended that separate specialized seeding rotations be introduced.

[SELSKAYA GAZETA] Doesn't this mean that the usual composition of the crops that are being grown will be altered?

[Nikitchenko] It has been shown by studies that volumes of radionuclids transferred to vegetation will depend upon the mechanical composition of the soil, upon its physical and chemical qualities, and also upon the kind and even the variety of one or another crop. Thus, they are absorbed more strongly from light and acid soils than from heavy and neutral ones. It also has been noted that vegetation which accumulates calcium -- this primarily includes all kinds of beans -- also gathers more strontium, while plants which prefer potassium -- buckwheat, lupine -- "are fonder" of cesium. Late-ripening types accumulate 1.5 - 2-fold fewer radioisotopes from the soil than-early ripening ones.

Therefore, depending upon the density of contamination, the composition of soils, pre-sowing working of the fields, and other indicators, we have been recommending the cultivation of winter and summer wheat, barley, oats, winter rice, flax, sugar beets, cucumbers, tomatoes, cabbage.

We are recommending that buckwheat and corn be grown only in soils which have a high sand and loam content and a low level of contamination.

[SELSKAYA GAZETA] Unfortunately, radioactive rain has not been selective: It has "seeded" the plowed field, and the meadow, and the pasture as well. How does this influence the raising of livestock?

[Nikitchenko] All pastures, like cultivated lands, are being studied carefully. We have a completely clear picture of their condition and specific agro-engineering measures of one kind or another will be taken depending upon the density of the contamination they contain: abundant application of lime, introduction of increased amounts of fertilizers, and deep plowing with subsequent planned land rotation (perezaluzheniye). A part of the farms and complexes, particularly milk-producing, are being shifted over to year-round indoor maintenance of cattle. The farms are being allocated additional feed-harvesting equipment and transportation.

At the same time, fields which have an insignificant level of radioactivity will be used to organize intensive pasturage of livestock which require careful maintenance of pasture areas, judicious and careful attention to each cattle pen, and generous provision of salt or mineral supplements. Considering that the level of radionuclides in milk is markedly reduced if an animal's organism contains an abundance of calcium and phosphorus, supplements which, first and foremost, contain these elements are mandatory in summer.

It is preferable to fatten animals that are being raised for meat in two cycles. In the beginning -- up to a year -- to maintain them on contaminated feds, and then, for 6 months, to move them to other regions and bring them up

to delivery with on clean feeds. The period of half a year is sufficient for an animal's organism to completely rid itself of radionuclids. This will be supervised by a special service which has been given the obligation of strict and continuous control of the purity both of output which comes, as primary products, to reprocessing enterprises as well as of the finally processed consumer product.

[SELSKAYA GAZETA] It is necessary to have hermetically sealed machinery as well as special outfits for machine operators and livestock-raisers in order to operate in contaminated crop and hay fields...

[Nikitchenko] Yes, and such equipment is available. The Minsk Tractor Factory, at the direction of the agro-industrial complex, has quickly mastered the production of machinery with hermetically sealed cabins, which ensure not only protection from dust, but also a necessary micro-climate. Other enterprises in the country that are supplying equipment to the afflicted rayons must equip their own products with similar cabins.

Besides this, in the village of Terekhovka in Dobrushskiy Rayon and in the Pridneprovskiy department of the Mogilevskiy Rayon agro-industrial complex equipment production association (agropromtekhnika), specialized workshops have been opened, outfitted with everything necessary for reequipping cabins and tractors as well as feed-harvesting combines. Sets of special clothing, two for each machinery operator and livestock worker, have been provided to the farms. The people have received training in the rules of work and conduct under conditions of radioactive contamination.

[SELSKAYA GAZETA] What kind of spring advice would you give to the owners of personal garden plots and amateur gardeners? Also, do restrictions remain in force in any rayons concerning walks in the forest and fishing?

[Nikitchenko] We have prepared and sent special written notices to the afflicted areas concerning the keeping of a personal garden plot in the contaminated area. These contain detailed recommendations on how to prepare the garden for planting vegetables, what and how to do it in the garden, how to feed household animals and poultry, and other advice. I'll cite just a few. When the ground warms up, it is necessary to dig up the garden to full shovel depth, to turn but not break up the clumps, and only to level and pack down the surface.

All of last years trash -- old leaves, fallen branches, and dry weeds should be gathered and buried at a depth of not less than one meter in a corner where there are no plans to plant trees or berries. Uncontaminated earth should be spread above them to a depth of 20-25 centimeters.

In areas, where this was not done last fall, it is necessary to treat the soil, to add 506 kilograms of double superphosphate and the same amount of calcium chloride or sulfate to each sotka [unit of measure -- 2,134 cm.]. From 80-100 kilograms of zeolite, which we mentioned earlier, should be applied per sotka. In addition, it is necessary to add 50-60 kilograms of lime per same sized area. Zeolite, lime and mineral fertilizers will be provided to personal farms by the rayon agricultural-chemicals association. We recommend

that organic materials be used only after they have been checked for radiation. Wood and peat ashes cannot be used as fertilizer.

It is preferable to grow root plants in garden beds. Peas, kidney beans, and beans need to be rejected. Tomatoes need to be planted in holes mixed with peat that has been taken from deep underground. When they have grown, it is desirable to raise cucumbers above the ground, so that their skins do not come into contact with the earth. It is best, of course, to raise them entirely under a plastic cover in uncontaminated earth,

Cows can be pastured on grazing land that, to a maximum degree, is free of contamination when the grass reaches a 15 centimeters in height. Cattle should not be driven into the woods. As before, it is better to have milk processed.

We are advising that people this year refrain from collecting mushrooms and going fishing in the waters of certain rayons in Gomel oblast, and also in the Slavogorodskiy, Krasnopol'skiy, Cherikovskiy, Kostyukovichskiy, and Klimovicheskii rayons in Mogilev Oblast. The areas in which gathering the gifts of nature is not recommended are now being designated with special signs by workers of the Belorussian SSR Ministry of the Forestry Industry.

I repeat that notices have been sent to local areas and that meetings and consultations are being held with residents. Answers to all these questions can be obtained from specialists on the farms and from the agricultural councils.

Instead of a Postscript

After this interview had been prepared for the press, we received reports from the afflicted areas indicating that many of the recommendations of scientists and specialists, unfortunately, have not been translated into concrete actions. The Minsk Tractor Plant, which reacted in such a timely way to last year's calamity, this year still has not sent out a single piece of machinery having a hermetically-sealed cabin. As they told us at the enterprise, several more months will be needed to prepare for their production and planned deliveries will begin only in the second half of the year. The combine builders at Gomselmash also are not keeping their promises.

In order to expand the area that is sown in grasses and to carry on planned rotation of hay harvests and pasture land, it is urgently necessary to increase herbaceous grass seed supplies. According to the calculations from Mogilev, an additional 500 tons of them are needed. For the time being 72 of them have been earmarked and a total of several tons have been shipped to the rayons. The delivery of zeolites, which it is particularly important to apply to gardens before planting vegetables, also, unfortunately, is being held up and, this year, the owners of gardens will barely receive them at all.

The reason for all these lies, apparently, with one old enemy, that has now become chronic -- the absence of obligation, the habit of "discussing and coordinating questions" when it is simply necessary to get the job done -- in a timely and conscientious way.

At the same time, it would be good not to forget that we are talking about rayons which we in a friendly way call a zone of special attention.

HEALTH OFFICIAL INTERVIEWED ON RADIATION OUTLOOK

Kiev PRAVDA UKRAINY in Russian 19 Apr 87 p 4

[Article by PRAVDA UKRAINY editor A. Zonenko: "The Prognoses of Spring"; first paragraph is source introduction]

[Text] What are the basic variables of the radiation situation today? What are the prognoses for this spring? The editors' mail contains many letters concerning such themes. A correspondent of PRAVDA UKRAINY has turned to Ukrainian SSR Deputy Minister of Public Health Yu. P. Spizhenko with a request for answers to these questions.

"I would like to note," said Yuriy Prokofyevich, "that the attention which is being given to this topic is entirely understandable. Indeed, the situation which we are discussing is, in essence, an uncommon one within the panorama of human experience. And this introduces its own psychological correctives. On the other hand, the complicated and multifaceted nature of radiation creates difficulties in evaluating its character and true dangers.

"Therefore, it is worthwhile, at the outset, to spend some time on norms of daily natural and artificial radiation and its present quantitative level in the aftermath of the accident at the Chernobyl nuclear electric power plant. The usual level is 0.3 - 0.5 rem per annum, which includes radiation produced by thermal electric power plants, television waves, medical research, high altitude flights, etc. As a consequence of the accident and during the time that has passed since it -- and this was noted in an address on Ukrainian television by the Ukrainian SSR Minister of Public Health, A. Ye. Romanenko -- we have received approximately the same amount -- 0.5 rem. In the future, this additional dosage will steadily decline. It is completely comprehensible that, excluding those persons who took a direct part in cleaning up after the accident, no resident can suffer because of this. Our biological tolerance level is much higher. International and national commissions for radiation safety have set the dosage at which certain harmful effects can be anticipated at 50 rem. Incidentally, for professionals (flaw-detection personnel, x-ray technicians, radiologists, and nuclear plant workers), the permissible annual dosage is 5 rem. A large number of observations testify that many of these people can work for 30 years, receiving a total dosage of up to 150 rem, without any aftereffects for themselves or their offspring. In other words, external radiation during the year since the accident has not produced and

cannot produce pathological consequences. And this is not a theoretical proposition, but a result of data from the careful study of many, many people."

[PRAVDA UKRAINY] And how, on this plane, can you characterize the radionuclides that have found their way and are finding their way into the human organism?

[Spizhenko] During the first weeks following the accident, iodine-131 predominated among the suspended particles. The period of its half-life (poluvyvedeniye) is 7.5 days and the organ where it accumulates is the thyroid gland. Initial rumors and fears related specifically to this element. Nobody received a dosage sufficient to cause damage to this gland -- this has been shown both by dosimetry and by subsequent study. And this could not have occurred, since it takes dosages in the range of thousands of rem to seriously harm the functioning of the thyroid.

And so, can such the radioactivity background basically affect our well-being and, in the future, that of our children and grandchildren? Of course, the picture should not be painted in rosy colors, but the consequences should be considered to be extremely minor. It should be added that, in order that nothing untoward will arise, fundamentally new hydro-engineering protective systems have been developed to prevent the run-off seepage of radionuclides into the Pripyat and Dnepr basins.

[PRAVDA UKRAINY] Yuriy Prokofyevich, will control over food products continue in the future?

[Spizhenko] Yes, it will go on. A radionuclide chain can be formed today only be vegetables, fruits, milk, etc. This is why the obligation of such systematic control has been made the obligation of a number of services. They are indicating that, in an overwhelming majority of agricultural products and feeds, the content of these substances does not exceed permissible limits. It is clear that products and feeds which do exceed set standards will not be permitted to be used. And this is an important prerequisite for maintaining public health.

[PRAVDA UKRAINY] May I ask you to address the situation in Kiev in particular?

[Spizhenko] Allow me to resort to statistics. While, before the incident at the nuclear power plant, the gamma background in the city averaged 0.015 - 0.2 milli-rentgens per hour, then it is approximately the same at the present time. Numerous studies of the radionuclides contained by the city's inhabitants indicate that, on the average, the increase in the background during the year comes to 0.38 rem. Without doubt, this is a result of the measures that have been taken to reduce dosage. In other words, the total dosages of such radiation are basically no different than the normal, pre-accident radiation level.

And, at the same time, because of false rumors which have become current in the city, the health of a some people has nevertheless sustained a definite

blow -- as a consequence of intensified stresses and reduced consumption of fresh food products, particularly milk and its derivatives, vegetables, berries and fruits.

Indeed, there have been cases of people who have used mineral water for prolonged periods of time and have even washed themselves with it, who have washed strawberries for 3 or 4 hours or who have refused to eat berries and fruits at all, who for months on end have poured out meat broths and have refused to drink milk, who have cut off the crusts from their bread, and who have not left their apartments for weeks at a time. This half-baked "radiation wisdom" can cause only harm today, because unjustified fear always carries greater weight than the real facts. And, taking advantage of the opportunity, I should note the simple truth that the real health of people is first and foremost in their own hands and that, today, there are absolutely no reasons and causes within the city to upset the usual balanced diets and way of life.

[PRAVDA UKRAINY] Here's another question. How much study has been made of the population within the area of the accident and of those who live within areas contiguous to the 30-kilometer zone?

[Spizhenko] This investigation has been included in the work program of the entire dispensary system. Its first stage, which applies to the population groups who lived in Pripjat, Chernobylskiy Rayon, and certain other villages in Zhitomir and Kiev Oblasts, has already been completed.

What are the initial results of this precisely developed, long-range prophylactic program. We have not detected any afflictions connected with the temporarily heightened radiation level in these localities. And, at the same time, the broad investigations that have been undertaken have allowed us to detect, in some people, the beginning stages of illnesses which had earlier escaped medical notice, or to determine predispositions to them. For example, in certain rayons in Zhitomir there is shortage of iodine in the water, and this is the principle reason for centers of endemic goiter disease. All these people, the healthy ones as well as those who have been listed on dispensary rolls, will be examined not less than once a year in order to ensure necessary preventive treatment of the adult and children groups.

In this connection, additional diagnostic equipment and devices has been made available. Suitable sanitary control is also envisaged -- so that people's nutrition, including consumption of milk products and greens, will be of full value. In general, the matter is being handled so that the line of prevention, the line of health, about which we are carrying on a dialogue, is carried out reliably and without hitches.

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RUMORS FROM ESTONIA EXAMINED

Tallinn NOORTE HÄÄL in Estonian 15, 19 Aug 86

[Article by Tonis Avikson: "Chernobyl, July 1986]

[15 Aug 86 p 2]

[Text] Yes, at first around 200-300 men went to procure clarity in the matter. They heard what they already knew. It was a taking hold of one's collar, giving a bump to the buttocks and throwing of sand. Otherwise, there was no force used. That is what the men themselves said, although at home there is also talk of big grapples. Plenty of heavy words shot by disappointment, indignation, anxiety and mixed emotions in general were flying in the air. In the flurry, the men did not even recall where they were and how the thing could end. There were nevertheless also those who cooled their hot heads and the affair ended without any bigger annoyance. The men dispersed. When talking about the affair, they said that according to the letters of the ones at home, the "revolt" or "strike" or whatever it was called was severely exaggerated.

At first the information spoiled the working mood of the men, creating psychological and explosively dangerous conditions. The flood of heavy thoughts threatened to burst the piston, like they said. For some time many of the men sat idle with their hands in their laps, having worked earlier like oxen (it was good to hear far away from home that the work, the skill of the hands and the agility of the thought of our men was valued highly in Chernobyl). There was no longlasting work stoppage. Normal work rhythm was restored little by little and at the time of our stay there everything was already in order. It is much more difficult to sit and let all kinds of thoughts undermine one's soul. Time goes faster while working, and inevitably thoughts of home, the worries of the family and the worries of their own are not so pressing. And besides, the work which is not done by them presupposes busy days for new men from Estonia.

In connection with this, there is another rumor which is unfounded. Namely, the men said, the rumor goes that there is an unproportionally high number of men brought there from the Baltic States, and especially from Estonia. Specification on location made it apparent that the matter is actually the other way around.

As far as the interim situation is concerned, the men are especially touchy and very vulnerable. Even a word which is meant as a joke could have an effect like a fire skewer. For example, during the week after the announcement, one could get a beating for the jokes which concerned sending men home. In general, every joke clearly has its place and time. At home, one can laugh about something so that even the Japanese laughing pillow would not offer competition, but at Chernobyl it would be tactless and even insulting. For example, sometimes "exertions of jokes" about the relationships of opposite sexes have an effect there like a lash into a hornet's nest. What should one think for example, of an incident when a superior had said to the wife who came to visit her husband, that why, because... Here we are talking about rudeness which is amplified manyfold by conditions.

Rudeness is not allowed in all kinds of conditions; but in a different condition, a man has an opportunity to choose whether to try to "teach" the ruffian or simply to leave. But in Chernobyl, he has no place to go and he only has the choice of bitter swallowing. Also in those living and working conditions, tactfulness and humaneness are not in excess. They make the tasks and commands which are indisputably easier for the men, which is not so unimportant. But if, for example, one scolds 30-year or older men like little boys, threatening them, just in case, with decreasing or removing their money, then it is difficult to see how this would be beneficial. The insults of the beginning times are sometimes still felt, but now everything is more or less thriving, the men said. They also confessed that not all of them are the straightest themselves, and sometimes others are suffering because of that.

Now the men who have been in Chernobyl for 3 months already said that they have had time to reflect about their life and activities and to look at themselves and the domestic bustlings as if from aside.

The high tension of the initial emotions has regressed. I explained to their questioning that no one has experienced such a big nuclear accident in the world before. This came completely unexpectedly (according to different data, the probability of an accident is 1:2000 - 10,000 to a reactor in a year); therefore one was not sufficiently prepared, and adequate experience was also missing.

At first one did not know too well what exactly, in what order, how and how much to do. Now one testifies that some things were not necessary to do at all and some things should have been done differently. One thought that one could manage quicker than the things actually took their course.

There is nothing unnatural in this, rather this time of missing the mark is inevitable in a given case. Many jobs took their course indeed in the method of trial and error and in the way of experiments, because the paths which one takes no one has taken before. Therefore it is understandable to extend the work time from 2 months to 6 months; the men themselves testified to this. They only said that someone could have explained this to them immediately, before the emotional approach to the affair took hold of them. Perhaps it would have helped to avoid a lot of unnecessary nervousness and strong words.

Later the thoughts of the men themselves started to move approximately in the same way. But also at the given case the political workers were not at the height of their tasks. In this respect, the joking of the men about the comparative effect of radiation and information to one's health is, in its way, even relevant.

The intermediate stress was earthed very strongly because on the evening and night of 23 June, St. John's Day bonfires were blazing in Belorussia. A unique, edifying experience in its own way, the men said. This shook, relaxed the nerves which had been on the edge, brought a little breath of home from far away, softened the feelings in the soul, and recalled many a mellow midsummer night at home.

That brought warmth, lots of warmth. The men said that this was a critical moment. Sullen feelings began to disperse; the young people began once again to joke and laugh, as it is natural. The mood began to be restored and that gave new strength to go forth and face the trials of coming days. These trials were not scarce and they were not easy at all. This could be only because of one's psychological load being far away from home and hanging with heart and soul on to it. Of course there are different types of people, but of the many and many men with whom I had contact, the majority is worth to be waited for patiently and as long as necessary. Several men said honestly that 6 months could change in today's confusion the plans which were made before they left a girl or a new wife. And if another person is in your heart and in your thoughts, no comforting word from someone, saying that that girl does not deserve you, counts.

The men said with apparent sincerity that the worry about the lives of loved ones was much bigger than the worry about their own health and living conditions. There is the time to do farm work, chopping wood or going to school. The mothers, fathers and wives who were left behind at home are not able to do many things on their own. They would need help.

Partially there is help; wood will be chopped in the country and hay will be made. But there are also many things in which the people at home have to cope with like a man. I don't know if this is a comfort to you but the men at Chernobyl are thinking of you, because real men can't but think of home and worry about weaker ones who were left behind and those who have it hard without them, be this in the work chores at home or simply in human relations which one misses now.

Homesickness is the biggest troll inside with which one has to struggle, the men affirmed unanimously. One can cope with everything else. In this respect, it is perhaps easier for the men who have to go now, knowing in advance that it is for 6 months and being able to tune into it accordingly. But one has to go, because not everything has progressed the way one thought and hopes for at first. How much longer, probably no one is able to say.

May this knowledge be of small comfort that one has started to give privileges to the men (and to their families) who have worked at Chernobyl. As the rumor goes, some more energetic enterprises in Estonia have done this on their own,

without waiting for the regulations from higher-ups. Men have already been promoted to the front line while waiting for the apartments; their children have been given places in the kindergartens and at day cares which otherwise are not easily accessible. We still have deficiencies in many things. This type of example is worthy of following wherever possible.

I believe that this is comprehensible. No one can say precisely and exhaustively what these men are leaving of them in this far-away Chernobyl. For us all. All of the ones who stayed at home have reason to be very thankful to them.

From here we get to some rumors which are connected with the living conditions of the men. The air from these tales is, as is known, in this area outright thick. I asked the men directly what they think of these stories and how they see the picture of reality.

Many an acquaintance told me before my trip when I was doing my "working campaign for the collection of the rumors," that I am an extremely naive person. No matter how hard I would try, I am allegedly not allowed to write the truth or anything near the truth. There were also scolders after the trip. I did not travel length-wise and crosswise through Chernobyl area. I was there for a short 3 days. Therefore it is understandable that I do not know all by a long shot. And who would know it. I want to share with the reader only that which I either saw myself or what appeared from the conversations in Chernobyl. Only men who have either worked in Chernobyl or have been there and also the parents and close family members who receive letters can be just judges for me. Now we are turning to letters.

I asked the men if they have been asked to take some kind of written obligation or any obligation at all to be silent about their living conditions in Chernobyl. The men answered unanimously--no!

The men said that because of these rumors, sometimes their family members don't even believe their letters; they think them to be overly rose-colored, saying that, well, you are not allowed to write anything else. They are allowed and the men are writing how things really are.

May the family members thereby forgive if in their letters to Chernobyl there is something similar to Hitchcock's film plots; because of the circulating stories here, the corresponding parts are read collectively. And one laughs heartily.

At the same time there are problems. The men receive letters which are coming from home generally in 3 to 4 days. The letter might not get there only for the reason that because of its thickness one suspects a shipment of money. But this should be very familiar to all of us from everyday life. Therefore, try to avoid in any case sending money in a letter. The story is a little worse with the letters which are sent home. As it was explained to us, the reason is, that the womenfolk, who are postal workers, change rather fast. It takes time for the newcomers to acclimate. The agility of the fingers does not come immediately. There are many letters and therefore some bags with the letters might be left waiting to be sorted. It could also happen that the family members get a letter which has been sent later than a letter which has been sent earlier; it has been read and the reply has already been sent.

Living Conditions

At first these were, understandably, poor. All possible buildings in a 30-kilometer zone area and also quite far beyond that were crowded. It also happened that men had to sleep in the woods, only a blanket protecting them from the coolness of the night. From this standpoint, the weather in May was favorable. During the day the thermometer showed continually 40-45 degrees centigrade in the shade. And even during the night it was 20-25 degrees centigrade. One was not accustomed to these conditions, but one made it do; one managed because one understood that there was not enough shelter for everyone.

(To be continued.)

[19 Aug 86 p 2]

[Text] Operation accomplished, I reminded my traveling companions of an incident in Tallinn's market during the day before departure. While looking at the goods on the counters, I happened to overhear a conversation between two women. One said to the other that, well, life in the Ukraine has turned the bones black of the boys who have come back from there. I was interested how the woman knew this; had she perhaps happened to see it herself. No, she hadn't. She had heard it from someone who in turn had sworn that this is the honest truth. My arguments were in this case completely inapt and senseless. The woman had her own opinion. Then I thought that in the case of many rumors the existence of some kind of truth is not important. Strangely it is so that the dirtier and more unbelievable something is, the more believable and easier it becomes to spread.

A new rumor which has been spread from the West has a similar background. The rumor is that thousands of people have been stationed at some special concentration camps or hospitals for leprosy patients. At least two such camps have allegedly been formed for the victims of radiation between Chernobyl and Gomel. In order to give greater credibility, it is mentioned that they were not able to determine the exact goal for the founding of the camps. They were either for guaranteeing isolation or for special treatment. As if the rest is exactly as one has mentioned. One speculates in this manner on foreign disaster and tries to collect propaganda points.

No one claims that the ones who have received radiation, especially the ones who have received more, will not have trouble with their health in their future life. It would be obviously irresponsible to stick such a safe conduct paper into the pockets of the people. So much more, since the radioactive radiation affects people in an individual way. One could suffer even from five roentgens whereas another one has no problems with 50 roentgens. Naturally, every normal human being is worried about his health. The inhabitants of Chernobyl region are for example worried the increased possibilities of cancer and genetic disorders. These kinds of things have been registered much earlier when the dose has been large. The danger of the beginning of radiation diseases is for the ones who get radiation by 100-200 roentgens. The Soviet specialists of radiology believe that and the opinion of their U.S. and Japanese colleagues does not differ from it much.

No one who was evacuated got a dose which is life-threatening. But it is impossible to say that their health will be fine in the future also (of course, if they were not ill earlier). Prophylactic examinations, and if necessary, also special treatments have to insure them from unpleasantness in the future. According to Dr Gale, the doctors have before them a complicated task which demands great technical and materialistic measures. In order to solve this task, one has to apply the newest accomplishments in medicine.

The vice president of the USSR Academy of Sciences, Yevgeniy Velikhov, one of the best specialists in nuclear and space technology, lead a group of scholars from Chernobyl, about 18 kilometers from the reactor, almost the entire month of May in order to dissolve the results of the accident. Almost every day and some days several times a day he flew on a helicopter to the place of the reactor in order to get as good an overview as possible of its state and of the work which needed to be done. He made a total of 40 flights. To the question, how great of a dosage did he get, Velikhov answered at the press conference in Moscow that he received apparently 10 roentgens.

Those men whom we visited should not have collected such a dosage and also those who have been at Chernobyl all 6 months since May. Of course, if any of these, contrary to the others, goes to work voluntarily to the closer zones to the reactor, then this is a different story. One should get out of this assertion that nobody is playing there with the health of the men.

In order to measure the dosage of radiation, almost every man has either around his neck or elsewhere a so-called dosimeter, the results of which can be read with a special apparatus. The dosimeter does not always have to be functioning perfectly. Apparently it does not even have very much importance. The thing is that the dosage is recorded in a so-called calculated way. Either at the place of work or at the living quarters, depending on where the men are at the moment, the level of radiation is measured in five different points with completely functioning apparatus. At that time, the average is not taken from the reading of the points, but the highest of the reading. And this is multiplied by the number of hours that the men spent at a given place.

Every evening a summarizing account is made, which is recorded for everyone. Thus at the time when the men are leaving, the final dosage should be even bigger than what they actually get.

There are also those who try to show their dosage as larger. For example, one man left his dosimeter for a couple of days and nights on the reactor in the dust at a closer zone, then picked it up, hung it around his neck and showed it in the evening to his superior. The dosimeter showed over 20 roentgens and the man asked if he could be sent home. It was not difficult to see through his cunningness. But one has started to reward men who do their work honestly and eagerly with a vacation trip. An opportunity of being sent home earlier is also not excluded. Already one or another thing has happened. But it has not happened that an Estonian man has left his life at Chernobyl. I can affirm this without hesitation.

I showed the men signs with the writing: "Chernobyl, the place of heroic deeds," asking what they themselves think of that. They said that they do not think of themselves at all as heroes. If so, then they are "heroes against their will," they added jokingly. They said that the real heroes in their eyes are the ones who have been evacuated, and who have to say goodbye to their familiar home town, perhaps forever and definitely also the volunteers who work close to the reactor or completely by its side. I can understand that I could wisely think like this at home or at the short stay at Chernobyl. But also the men whose days are difficult there and also whose whose thoughts are like lead by the evening...

Of Food and Drink

I took along stories from home that there is hardly anything to eat at Chernobyl and if there is then it is hardly fit to eat. The men were allegedly simply starving. As far as food is concerned, then I am quite finicky. I thought that maybe I should take some food along with the stories on the trip. I was recommended not to take any. And it was wise. It appeared that the funds for the goods and especially for the groceries have been distributed according to the needs of the ones who are in the zone of the sufferers.

No matter whom I asked, I was told that there is as much food as one wants. One can even triple the amount. In some places, they even feed the leftovers to pigs so that they could have fresh meat. To be sure, the food seemed to be rather drab; everyone said that. But in this type of situation one cannot compare the food to some meal at the Viru Hotel. Not even the superiors get pork chops, pork or kraut there. I say this with complete conviction because I ate both here and there.

There was lots of butter, also tasty bread and in general almost everything which was offered. They offered all kinds of porridge which I tasted for the first time, and also meat conservers. They offered fish, cucumbers, tomatoes, apples, tea and even stews to which one had to add meat from a can. I asked the men whether tomatoes, cucumbers and apples were not put on the table just at the arrival of guests. They answered that during the last weeks they also have had these without guests. From the auto stores which come every day, it is also possible to buy juice, cookies and other things, sometimes sausage. However, it is not enough for everybody.

The men said that even though the food was drab, it was at the same time nutritious and everybody's stomach was really full. The rumor that they are starving was called unanimously nonsense. Apparently none of the men were losing weight there. All members of our group showed without exception small signs of gaining weight.

They were saying in Estonia that the 1 June law of last year was supposedly forgotten in Chernobyl. Rivers of liquor and red wine were allegedly running there like a brook. Allegedly one was obliged to pour 200 grams of this down his throat a day in order to save his health. They also said that auto drivers had special certificates which allow them to drive while drunk. I asked the

men if Chernobyl had really become the only Mecca for trippers in the entire Soviet Union. The men started to laugh loudly and shake their heads at the same time. On the contrary, this was probably the only place where there is a dry law. The men have been told about the dangers which are connected with alcohol.

The rumors about the wonderful treatment and function of liquor and red wine were not true. The rumors said that they consisted of combinations which unite and take the harmful substances out of the organism, among them also the radioactive isotope. If this were so, then the chemists would not have difficulties separating these combinations or synthesizing these and using them for treatment after that. Quite logical, said the men.

On the contrary, alcohol intensifies the toxic affect of many of the radioactive substances (among them strontium-90) and can lead to disorders of sexual activity or to gastric diseases. The academics and professors note in their weekly paper argumenty I Fakty that the organism of a human being is a strict ion. One can compare alcohol in its effect with ionizing radiation. Acting hand in hand, alcohol and radiation amplify each other, bringing forth confusion in the structure of the ions. This leads to the stoppage of radioactive substance, making neutralizing and secretion more difficult. Alcohol also produces shortage of oxygen. But this is the law in radiology that the restoration comes more active the bigger the oxygen content of the tissue. Thus the doctors have not recommended alcohol as a help and do not intend to do so.

The great majority of the men understand the situation and keep themselves away from harm. There are few men who procure liquor or moonshine no matter from where. They try to do in Chernobyl what they used to do at home all the time up to now. The liquor devil does not let anyone who has gotten into his clutches loose easily. These kinds of men hound something to drink from old men and women who have been left in the surrounding villages. And they also get it for dear money. As the rumor goes, a three-liter jar of moonshine costs 100 rubles! Controllers do go to the villages to besiege the old men and women, but they cannot track everything down, especially if these villages are 30 kilometers outside of the zone. One does observe the dry law almost without exception. Some men are being punished. If there is no other way.

One told an interesting story in connection with moonshine. In one village a man entered a barn, stuck the dosimeter by the manure pile (there the level of radiation is higher than at other places on the floor, walls or ceiling) and asked, "Well, little mother, do you have moonshine?" "No, what do you think, son," was the answer. "But the apparatus shows it!" the merciless "son" said. And the frightened old woman indeed brought out a container of moonshine which was very cleverly hidden in the manure pile.

Musical Vitamins

The ensemble "Vitamin" deserves without exaggeration an ode for what they did on this unusual trip. Unfortunately I am not at all sure that simpler things will turn out all right for me. Therefore I am abandoning this thought and I will try to put something down on paper from my impressions.

Before the trip I did not know what to think of "Vitamin." A couple of years ago from the concert I heard in Pärnu, I got the impression of it as a "light" ensemble. The times in between did add some pleasing original songs and successful instrumental pieces (especially "Festival"), but they did not correct the overall impression much. I am not getting into the deeper values of music while doing this because I am in this respect almost a complete nonexpert. I approach it from the common listener's level: I like it, I don't like it; it attracts me, it does not attract me. But now "Vitamin" appeared to me in a new quality. This both as far as music and content of the men themselves are concerned.

The men learned what awaits them last minute in Moscow, about 36 hours before leaving Tallinn. A difficult concert tour at BAM was just behind them. Fatigue had taken hold of them completely. And suddenly the news: again on the go, without any kind of preparation, not to mention a vacation, and directly into fire. And they were able to do that. They were burning themselves and infected others also. Musicians and showmen at the same time, like they should be.

There were four concerts, the first of which started at 8am on 26 July in Komarin. In order to get ready, to get there, to set up the apparatus, to get the instruments and voices going, the men had to get up at 5:30. On that day they had two more concerts.

Exceptional conditions sharpen senses and cognition, force to squeeze out one's last. Every note and word was well-received; the reception was exceptionally warm. And it was far from being out of politeness. Men were simply out for men. They brought joy, change and comfort to those whose life was right now drab and already because of that difficult. Music and the intermission rejoinders were a narrow and fragile bridge with home for the Estonian men. They need that very much. This is what all said. Men's emotions were sincere. The words of thanks came from the heart. With a feeling of pride in one's heart, they answered the men, yes, I am with "Vitamin."

Immediately after the first concert, the men were "the honored ones of Chernobyl." And for the next concerts they were able to take a new name "Respirator" which they had earned with honor. At the last concert on the evening of 27 July, the ensemble "Roentgen" gave "Respirator" competition. "Roentgen" consisted of Riho Breivel, Aivar Margna, Enno Sinipalu (Svejk), Valeri Udov and Aivar Jamalainen. They had behind them successful concerts and several performances for dance evenings at the regional centers. After the performance, one thanked "Roentgen" with the words, "Good boys, it was a good concert. We hope that your professional level is going to rise to two roentgens." Also the "Vitamin" boys praised them. But this did not make their heads swim.

While finishing their mutual performance, Aivar Margna, the soloist of "Roentgen," said that there is nothing to do, "Vitamin," i.e. "Respirator" is still better right now. Already as far as the name is concerned. Besides, they have solely more apparatus than "Roentgen", this can be felt even without a dosimeter, not to speak about ability. But well, our competition has not ended yet...

Men like these are not going to be left in the lurch. They are also able to direct the energy of others into the right channel; they do a lot to keep up the normal spirits. Their words and deeds have authority. This is necessary in the given situation. One more thing about "Vitamin." In Mart Siilmann's opinion, that ensemble is on its way up. To supplement their repertoire, they took along the anthem of Chernobyl, Chernobyl rock. "Chernobyl 86" and "Accident."

Conclusion

We got back to Tallinn on the evening of 29 July with an immense flood of impressions. Experienced journalists say that if you have spent 3 days away from home, it feels as if you have enough material for a book. If you have been away 3 months, then a much longer article comes out. But if you have been away from home 3 years, you are in a quandary whether you are able to write anything sensible from the experience. I had luck with the time I was away. I can write something for a small brochure. I said to the men jokingly that I will try to write about it so that upon meeting with them I would not have to be equipped with a shield or with a soldier's helmet. We'll see...

The most important thing which I took back home from these unforgettable days, many encounters and conversations is the knowledge that these men at far away Chernobyl are not broken and do not break any more. Yes, they are constantly oppressed with a psychological load which is piled up by unusual circumstances and difficulties which burn the energy of nerves and spirit and one that is the most important one, homesickness. Everyone counts the days until he can go home. Nevertheless, these men are full of joy for life and pleasure. Their laughter is the best medicine in the truest sense; it helps to endure all difficulties more easily, to chase away feelings of depression which sometimes unavoidably creep into one's heart. Like the final words of one song which is taken along from Chernobyl: state: ...no one despairs because he is still a man of Maarjamaa (Mary's Land).

I don't know if I succeeded in lightening the hearts of the ones at home just a little. Our hearts did indeed lighten considerably after we went there.

13023/9869

CSO: 1815/19

SALARIES OF TEACHERS IN BRAGINSKIY RAYON QUESTIONED

Minsk SOVETSKAYA BELORUSSIYA in Russian 27 Nov 86 p 2

[Article by V. Bibikov: "Negotiations Are Still Going On in the Departments"]

[Text] Hardly anyone would find fault with the fact that salaries and wages paid in the Far North are higher than those in the "big country". The living conditions there differ considerably from the usual.

Special conditions also exist in rayons of Gomel Oblast that are adjacent to the area where the Chernobyl Nuclear Electric Power Station is located. This has given rise to the introduction of supplementary wages. However, to continue the comparison, the system of bonus payments for persons working in the Far North may be understandable to everybody, but the same cannot be said for the pay system used in regions which have suffered in the aftermath of the AES accident. This is borne out by letters sent by readers.

One was sent by O. F. Shlepnev, principal of a middle school located in the village of Mikulichi, Braginskiy Rayon. He arrived there from Novosibirsk several months ago. Oleg Fedorovich travelled a long distance to bring his continuous education process for schools. In essence, to describe it briefly, it consists of arranging throughout the school day a series of lessons alternating with physical exercise; recesses for breakfast, lunch, supper and naps (for six-year olds); activities for pupils in various circles; viewing of motion pictures, etc. This system has been found to be very suitable, since the difficult situation has rendered it advantageous to limit the children's outdoor time. Now, other than for studies, they are assembled into extended day groups for 42 to 49 hours a week, including Sundays, instead of the previous 30 hours.

The teachers' workload has increased, of course. Due to the existing situation, they are permitted to work extra hours and draw up to twice their salary.

"In the case of the school principal, the director of studies, the extracurricular activities organizer and the initial military training instructor, in contradistinction to the other teachers, additional pay was limited to an amount added to the basic salary, without taking into account the work they perform as subject teachers," writes O. F. Shlepnev in his letter. "The four of us are not paid at all for our supervision of self-study work and leading

various circles and workshops. The end result is a salary which is lower than that of many teachers. Three of my colleagues have submitted a request for release from their assignments and a change to teacher or instructor status."

O. F. Shlepnev also raises the question of number of maintenance personnel and wages paid to them. The school activity time has increased considerably and the need for maintaining a state of cleanliness has become more stringent. The number of cleaning women officially allowed remains the same. In this connection, if a person wishes to work at time-and-a-half, he is paid only straight time for the additional time he works. Of course, this does not provide an incentive for working additional hours as necessitated by the personnel shortage.

Finally, adjustments have not been made in the extracurricular activities organizer's salary. This position remains compensated at half-salary, even after institution of the extended day. However, there are incomparably more duties now. At the same time, the librarian is now paid a full salary instead of the previous half-salary. In this case, however, the school has a much greater need for an extracurricular activities organizer.

We visited the Mikulichi Middle School, accompanied by N. M. Busygina, who is temporarily carrying out the duties of director of the Braginskiy Rayon Department of Public Education. The principal was not available at the time, but studies director M. N. Sidorok stated that "in the school there are circles for technical model making, flower growing, chess, dancing, amateur talent, photography, tennis, and others. Virtually all teachers are carrying a maximum workload. For example, in October the principal performed 67 hours of unpaid extracurricular work with pupils and the motion picture club. The studies director is credited with 34 hours of similar activities. In spite of this, every month in the school there are about 170 "empty" hours that should be filled with some kind of extracurricular work with children. Who can do this? As stated above, the teachers are fully occupied, and it is virtually impossible to find someone else in Mikulichi to do this work.

"We have a good opinion of the Mikulichi school," said Nina Mikhaylovna Busygina. "And the principal, although new, has initiative and more than others organizes for the children field trips to museums and enterprises, to theaters, etc. We are gradually disseminating the experience of the unified education process to other schools which are in the same situation. However, they do not have such problems, since the teaching collectives are considerably larger, making it possible to distribute the workload uniformly and recruit outside specialists for extracurricular activities."

The situation existing at the Mikulichi Middle School could be alleviated somewhat by assigning an extended day group teacher. However, the school administrator refuses: "We need a teacher who is a generalist -- one who could instruct pupils in literature, mathematics, etc." Otherwise, the self-study work could become worthless. The rayon department of public education cannot make such a jack-of-all-trades available. In the Braginskiy Rayon there is a shortage of teachers of chemistry, biology, geography, history, Russian, initial military training, pioneers, etc. For this reason, the rayon public education

department does not insist on the only acceptable solution: assigning to Mikulich a vuz graduate whom senior colleagues could eventually mold into an experienced teaching specialist. Personnel training is one of the duties of the school principal. For example, he could delegate pupil self-study supervision and free himself to do what a principal should be doing. There are many problems, including repairs to the school building and equipment for the athletic complex. The first quarter has passed, and neither job has been completed.

The other problems cited by O. F. Shlepnev are beyond the capabilities of the rayon public education department. Therefore, it was necessary to discuss them with V. V. Stepanenko, chief of the Planning and Finance Administration, BSSR Ministry of Education.

"The problems are not new," said Viktor Vasilyevich. "We have received seven or eight letters addressing this subject. The cleaning women problem will be resolved partially in the next few days, when additional cleaners are assigned to the particular rayons. However, their pay above the established wage will be at the usual rate, the same as for principals, studies directors, and extracurricular activity organizers. We suggested that the latter -- teachers -- be paid additionally for the 12 hours of teaching workload per week which they may legally perform, pointing out that instruction is an integral part of the responsibility of a principal or studies director. However, the BSSR State Committee for Labor is adamantly opposed."

The above was confirmed by A. A. Kovsher, the committee administration chief: "Supplementary pay can be discussed only on the basis of the wage rate (salary). And the teaching workload of a school principal should be above that. Relative to cleaning women, lengthening of the workday should call for overtime pay, rather than work at 1.5 times the basic pay. This problem should be resolved by union organs and the BSSR Ministry of Education.

Lawyers representing the organs involved are debating the interpretation of the phrase "rate of payment" (salary) as it applies to a school principal or studies director. The USSR Ministry of Education has been presented with the suggestion that an extracurricular activity organizer be paid at full salary wherever necessary. All in all, the situation giving rise to the need for an additional economic incentive exists for some time. A clarification has not come forth. This, along with certain obvious contradictions in the pay system, is a hindrance to people in their becoming fully committed to their work.

13005

CSO: 1800/183

INTERVIEW WITH ACADEMICIAN LEGASOV

Moscow IZVESTIYA in Russian 23 Jan 87 p 3

[Interview with Valeriy Alekseyevich Legasov, academician, winner of the State and Lenin prizes and first deputy director of the Atomic Energy Institute imeni I. V. Kurchatov, by G. Alimov, under the "Point of View" rubric: "Science Has No Use for Individualism"; date and place not specified]

[Text] He is well known, and not just in this country. As a result of the traditional "Man of the Year" competition held in the West, he has become one of the the ten most well-known and outstanding personalities, and one of those who has been in the center of attention of world society. Of course the Chernobyl tragedy played a large part in this, and Academician Legasov participated most actively in eliminating its after-effects.

Our correspondent met with State and Lenin Prize laureate and First Deputy Director of the Atomic Energy Institute imeni I. V. Kurchatov, Academician V. Legasov.

[Alimov] What is your profession: reactor operator, power engineer, physicist or chemist? Actually, your interests seem to be spread among a variety of scientific fields.

[Legasov] No, I'm not a reactor operator; I work in that area of technology which supplies nuclear reactors. The reactors themselves are not among my responsibilities. As for my profession, I'm a physical chemist, a graduate of the Mendelev Institute's engineering faculty. The physical chemistry faculty was set up in turn by Igor Vasilyevich Kurchatov. That's where the specialists who isolate isotopes and work with radioactive materials, and who are familiar with the finer points of nuclear processes receive their training.

[Alimov] What objectives were you given when you took up science, or were you not given specific goals? Have you ever thought about this?

[Legasov] Almost all of us who graduated from our faculty knew we were going to work in scientific research institutes. We were trained for scientific work. We imagined future scientific work not merely as assimilating that which had already been achieved. All our thoughts were focussed on one

thing--that we had to raise the rod higher, if only by one notch, above its former level. That's the way they taught us to think. That was our banner. I check on the fate of my comrades: they are now working in a number of different places; some in science and some in industry, but we have remained true to our intentions.

I am presently in charge of the Department of Molecular Physics at the Kurchatov Institute. By the way, I came here as a student to complete my graduation thesis, and returned several years later as a graduate student.

[Alimov] We tried to get in touch with you more than once following the events at Chernobyl. It was practically impossible. In all, how long were you at the accident site?

[Legasov] I arrived at the AES on the evening of 26 April. The basic work to contain the emergency was already underway. By 6 May the situation was more or less clear. The basic decisions had been made. After that, I came to the power station as required, on more than one occasion. In a word, it was like having two homes. How much time altogether? You know, I didn't keep track. It was a lot.

[Alimov] What specifically did you do at Chernobyl? What did you begin thinking about what happened there?

[Legasov] There had to be specialists at the AES who were well acquainted with nuclear processes. I didn't do anything heroic there. Everything that was done, was done collectively. All the suggestions which were made had to be scientifically substantiated; no incorrect decisions could be allowed. And so part of what was done was my work. But only part.

And now about what I thought. I had been trained for major emergencies. Several years ago USSR GKNT [State Committee for Science and Technology] put me in charge of a so-called industry-wide safety group. Because of our professional interests, we delved into the problem of the potential hazards of the different types of power engineering. We examined the overall system of production processes and found out which were its most vulnerable points. We concluded that major industrial accidents were imminent all over the world and that a qualitatively new situation had arisen, i.e., that there had been a sharp increase in the power concentrated in a single area, and that this power was often controlled by a single operator. Events here in this country and abroad showed that our misgivings had not been in vain. But as for me, what was most unexpected was the fact an accident had occurred where one had been least expected: at a nuclear power station. This had seemed highly unlikely. Just think of how many successive incorrect actions had to be taken for this to happen!

Man, who has given himself powerful technical equipment, has just begun to think of ways to protect himself from their dangers. Right now, we have to contend not with what has already exploded or what may explode tomorrow; we need to realize once and for all that we must struggle to devise protective technology adequate for the power which we have given man. This a problem common to the whole world. I am in favor of respect for ergonomics--for a

right-thinking and well-reasoned structure in our attitudes towards the "man-machine" system. This is the lesson Chernobyl is teaching.

[Alimov] What are your thoughts on the directions nuclear production processes will take as they continue to develop?

[Legasov] Remember, every energy source has brought with it revolutionary changes. People mastered the secret of fire so they could be warm and safe from caprices of nature. But fire, which looked as if it might perhaps be the solution to the problem of power production, then gave us the means to produce iron and copper. Man substituted coal for wood and this gave rise to the Industrial Revolution: steam-powered machines appeared, steam locomotives, steamboats....And then there came petroleum. It gave birth to the motor vehicle, aviation and rocket technology. And this is how mankind has developed. In the beginning we sought some energy source to be used purely to produce power, and all of this led to radical technological changes. I think there is no doubt that nuclear power engineering too is revealing something new about itself to man.

[Alimov] What, in your estimation, is the most important aspect of scientific work? What are your guiding principles?

[Legasov] If nothing else, it is important to start out correctly. I'm not sure this can be called a principle. But I do believe that one's starting positions, whether in science or in life, are the most important. It is no accident that psychologists and other experts believe that the first four years of a child's development are extremely important, i.e. the interests inculcated in him, whether his inclinations are discovered or not, whether or not he is encouraged to listen to music, whether a pencil is put in his hand or not and whether he is gifted with any sketching ability or not. In science too, the starting points are the most important. Unfortunately, sometimes those of us in science begin with a great deal of derivative work--it starts off from an instrument (because it's there), from some sort of formal plan, from blindly copying a predecessor's experiment or an institute's traditions. And then they begin to look into things and wonder whether the work really needed to be done.

[Alimov] It is widely held that only 1-5 percent of all scientists generate ideas and that the remainder are the guardians of established scientific dogmas. How do you feel about these figures? What kind of thinking has brought about this situation in our science?

[Legasov] I haven't worked out the percentages. I don't even know how to go about figuring them, even though I am familiar with such assessments. I see science as a relay race in which we pass a baton one to another. I know a great many people who generate ideas. A generator of ideas is, if you will, the latest person to breast the finishing tape. But before him, there were certainly some people who had passed on the baton. The situation is like this (and I've been through it myself): a colleague comes to me and tells me to read some article in a journal. That's all, and then he leaves. I get wrapped up in my work. The article edges me toward certain deliberations which I express, and then someone conducts an experiment. And eureka!--success! And

so it turns out that someone succeeds, by dint of their character and thinking, to formulate one or another "race-winning" idea. A race? Of course it's a race. And yes, everyone agrees that the winner must possess definite capabilities, and a mind (which is trained), capable of formulating a new idea. But science is a collective affair. There couldn't be a single composer of genius without those people who understand his music or without those who actually write it down. The professional environment replenishes itself with the most capable people. They are not engendered in isolation. Science has no use for individualism.

[Alimov] Does everything suit you about the way the present system for organizing scientific research is set up? Couldn't it be divided by considerations?

[Legasov] Do you recall the joke about how sculpture is made? You take a piece of stone and remove everything that's extraneous. It seems to me that we need to do the same thing in science these days. Our science is very rich in potential. Why is it that this potential is not always realized? The primary cause is superficial attitudes. Every year with my own hand, I probably sign tens of thousands of papers which are related to science and which yet have no relation to science: substantiations, targets, plans, plan predictions and many other things. A vast army of people subsist on this, and do not simply subsist, but live like parasites on it. Bureaucracy is fatal to science.

Hierarchical ranking has always been counter-indicative to science as well. It stifles it. Neither science or art has any use for intermediate links. We need to rid ourselves of people who interfere with our work. Scribbling and formalism have gotten to an extent already difficult for science to bear.

And furthermore: every natural scientist should have an excellent education in the humanities. Of this I am profoundly sure. Otherwise a true scientist will unintentionally limit his own potentialities. Great scientists [texkhnari] have always been stood on the shoulders of our great humanitarians. That's the way it should be. But this balance has been upset in modern science, and herein lies danger.

[Alimov] Which of your scientific works do you consider the most successful?

[Legasov] Obviously those which have done the most good. For example, we have succeeded in synthesizing unusual compounds, which were hitherto non-existent. They turned out to be extremely useful to the nuclear technologies. Fortunately this research has been recognized by the scientific community. I have been extremely fortunate in the sense that the results of my search have been brought into the realm of applied science very quickly.

[Alimov] What sort of problems are you involved with now, and what would you like to be working on in the near future?

[Legasov] I'm still working in my own field, creating new substances and materials and ways to produce and use them. Right now I feel totally obligated (in the wake of Chernobyl) to occupy myself with problems of

chemical diagnostics. What exactly is that? We want to devise sensors capable of recording the most minute releases of gas from metals and other materials. These would be early warning sensing elements. Every design lives in accordance with its own laws. There is always something occurring within them, and the state of a material is always changing. A sensor is called upon to keep watch over all the changes continuously and give prompt warning of danger.

[Alimov] Are you interested in what's going on in the other branches of knowledge?

[Legasov] Absolutely. The bonds between the cells of a united organism should not be lost. I would even be in favor of specially training people who could "transmit" information from one field to another. This is a matter of terrific importance.

[Alimov] In which field of science do you think we can anticipate qualitatively new discoveries?

[Legasov] I can only give you an amateur's answer. As you know, it's always easier to expect something outstanding from a field about which you know nothing. I think we will be seeing more complex materials, processes and technologies. They will be based on biologically active components. But I'm not talking about bionics or biotechnology, but something qualitatively new, which does not live in accordance with the laws of physics and chemistry, but of biology; something capable of exchanging information, capable of restructuring, something which can possess memory. I dare to think that we will witness the appearance of equipment which operates on the principles of a biosystem.

[Alimov] We have a great many students. You've even organized "your own" special group at Moscow State University. What sort of scientists do you want to see them become?

[Legasov] I want them to comprehend and to realize the most important thing: that for which they have been predestined. Since a man is born into a world which doesn't know him, he ought to leave behind something which did not exist before him, no matter if it is a comma, or a period, just so it's his own.

12659

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CHERNOBYL, ENVIRONS CONTAMINATION STATUS VIEWED

PM231421 Moscow KRASNAYA ZVEZDA in Russian 13 Jun 87 First Edition p 3

[Article by Lieutenant Colonel V. Baberdin: "Vigil at Chernobyl"]

[Text] I confess that when I went to Chernobyl this time too I was still worried. I knew that everything was going according to plan, that the situation at the AES had improved, but all the same there was still this uneasiness. My mind involuntarily returned to the previous trip, and to last fall's events.

At that time the remains of the fourth reactor had finally been entombed in its concrete armor, the first power unit had been started up, to be followed by the second, and large-scale decontamination of the territory had been carried out... And at the government commission's meetings specialists were working on the tactics for the next offensive.

All this happened not too long ago. So what is it like there now?

The first steps around Chernobyl. The city has been transformed--the trees are green, the flowers are blooming, the streets and the approach roads to the AES are once again being asphalted, and many house roofs and facades are shining with fresh paint. The atmosphere is energetic and businesslike. Everywhere there is a feeling that the situation is back to normal.

"Of course, there are still a lot of problems," Major General V. Shornikov explained. "Work to eliminate the consequences of the accident and create conditions for the safe use of the station is continuing. Many ministries and departments and specialists of the 'Kombinat' Production Association are taking part in solving them. A number of serious tasks also face the military collectives: decontamination and road building, maintenance of hydraulic engineering installations, dust suppression..."

"7001." Everyone at the Chernobyl AES knows the installation of this name--the premises at the very top of the third power unit, under the ventilation shaft. Yesterday this was the spot indicating the direction of the basic strike within the general plan of attack on the "invisible enemy." Today however...

We impatiently go up the already familiar staircase with Major A. Yelchaninov's group. I remember, a few months ago people moved about quite differently here: carefully, moving quickly through individual particularly dangerous areas.

The level of radiation here is approaching the norm, but is still above it in some places. We meet groups of people in the stairwells, passages, and in the adjoining rooms. Some are purposefully hurrying somewhere in particular, others are examining equipment and installing instruments, yet others are busy with decontamination work. On the way we drop by the reactor hall. Work is in full swing: The reactor is to be started up in the fall.

We go higher.

"Do you recognize it?" Yelchaninov opens the door.

The roof of the covering facility (the "sarcophagus") is right near by. The "sarcophagus" adjoins the wall of the third power unit and is clearly visible from the observation point.

The construction workers have established themselves up here: They have installed a concrete pumping station and stockpiled building materials. The uppermost, and at one time the most dangerous, section of the roof is covered with an additional layer of concrete. Cleansing operations in the remaining areas are being completed, and hydraulic sealing is being resumed.

And here is installation "7001." It is still not recommended to stay here for long. But that is for the present. Soon, with the erection of a biological defense, work will be completed on this sector as well.

I observe the activities of Major A. Chekmasov. In an ordinary situation he seemed to me to be calm, thorough, even a little sluggish, but now he is transformed--instant reaction, precise, automatic movements.

...A few seconds are spent on lining up the television camera. One step, a second--a monitoring gage, a check of the biodefense partition. A few more steps--he checks the special instruments and mechanism and glances at the ventilation device... That's everything. "Now you can go down," he waves his hand. Explanations and commentary later.

Maj Yelchaninov's group on the third power unit are jokingly called "the ambulance guys."

They are "spearheading the attack"--they are going where the radiation situation is unclear, where intervention and the advice of first-class specialists are needed. Their task is to assess the level of radiation on the spot, to work out a method of decontaminating the installation, to find that one correct way of achieving the goal with minimal doses of irradiation. The troops follow them. In general, they justify their name. So it was on that memorable night...

The previous evening there was a telephone call to the Chernobyl boat station where the group was based. The management needed by the morning data on the measurement of radiation levels in all the buildings of the third power unit. Not only the figures but an analysis of the state of affairs. "If anyone can do this, only Yelchaninov's group can"--this was the general opinion.

Whereupon the specialists arrived at the station. A short meeting, an instrument check--and to work. Each person had his own sector, his own route. After 2 hours they met, discussed the situation, and once again set to work.

It is difficult to say how many kilometers each person in the group walked and crawled that night. They examined about 1,200 premises and "felt about" with their instruments. The remaining few hours of the night and early morning were spent processing the measurements and compiling reports. The task was fulfilled.

"Risk?" Maj A. Chekmasov (San Sanych, as they call him) ponders the question for a moment and continues: "A certain amount, yes. But it doesn't compare with the risk in the first weeks after the accident. Moreover, it is justified. You must understand and really feel how your information, technical solutions, and simple advice are awaited. Yes, your own advice... Yes, sometimes it is difficult for us, but it was a hundred times more difficult for those who were here before us. They passed on their knowledge and experience to us."

"In 'room 7001' you yourselves have seen everything that has already been done there," Aleksandr Aleksandrovich continues. "I was not the only one to dream about it at night. You hardly have time to solve one problem before a second and a third one crop up... All the same, we won. Each one of us, specialists as we are, know exactly what has to be done today, what tomorrow, and what the day after tomorrow. And it's the same in each sector of the AES."

"In the Chernobyl AES zone we are now at the period of maximum water levels and consumption. It is essential to ensure increased observation of the condition of the dikes, particularly in the Ilya, Sakhan, and Braginka river basins. A rise in the level of the Braginka may lead to an overflow of the dam at the village of Lodyzhichi."

Fairly recent hydrotechnical information. Now they have started to forget about flooding, but "high water" persists in some places.

"In the region of the nuclear power plant," Colonel I. Ovchinnikov explains. "One hundred forty dikes totaling more than 40 km in length were built in the fall on the Pripyat itself, on the small streams and canals running into it, and in low-lying areas. Military engineers worked on them."

Indeed, the protection of the Pripyat River and the Kiev reservoir against polluted surface and underground water has been organized in an echelon formation and has been thoroughly thought out. You are convinced of this when

you look at a map of the zone and the charts. The reservoir acting as the AES cooler has been completely isolated. A drainage screen has been set up around it, and a "wall in the ground" has been built. Further along there are interception dikes, and shut-off and filtration traps for the silt. In general, all possible access to the main reservoirs have been closed off.

You won't find a description of a single one of these installations in engineering manuals. But the sappers do also do their "usual" work. Recently, for example, a pontoon was built across the Pripyat River. Now you don't have to make a detour as before to get to the left-bank villages of Gorodchan, Zalesye, and Kolyban.

"Well, how is the water in the Pripyat?" I ask.

"At the level of the sanitary norms, even in the Chernobyl region," Colonel V. Boyko replies.

Right now the group which he leads is working together with specialists of the hydrometeorological service on sampling water, air, and soil specimens.

"Yes, there were fears about flooding and the spring rains but the water-protection installations have completely fulfilled their function. The control readings, which are carried out constantly, bear witness to this. And not only the water. We are carefully monitoring the status of the atmosphere. But our main task now is sampling the soil. Over the entire 30-km zone. At present there are about 5,000 samples to be taken, and in the longer term--about 12,000.

The importance of the work goes without saying. Future tactics to render the zone habitable will largely depend on the results of the analysis. And this is not a one-shot campaign. A system of long-term monitoring has been proposed. The data will be fed into a computer and used for the adoption of various solutions. Given this, every point of a reading must be strictly "attached" to its particular locality. A reference chart has been set up for this.

What does it look like? A map of the 30-km zone. The entombed installation is at the center. Thirty-six lines radiate from it, one every 10 degrees. There are points on the lines. Their density is uneven--the closer to the damaged reactor, the more points are plotted. And this is understandable--it is essential to have more detailed information about the danger zone. Five soil samples are taken at each point (using the "envelope" system). All the samples are carefully packed, and an identification tag is attached to each one.

I look at the map and try to imagine where the group's machines may be at a given moment, which country roads they are moving along. But here's a place machines won't get you very far--the Pripyat has overflowed, there are channels, lakes, and swamps all around.

"There are three officers working in this area," Vasiliy Andreyevich Boyko explains. "They work autonomously, visiting the various points. Every evening a helicopter delivers provisions to them and collects the samples. We have offered to relieve them--no chance of that, they intend to see their work through to a finish. As far as the atmospheric condition in the 30-km zone is concerned, it is not now causing concern: The amount of radioactive substances in the atmosphere is several times lower than the permitted concentration and is continuing to decrease."

By the way, Lieutenant Colonel A. Ilyash has suggested an interesting device for monitoring the atmosphere here in Chernobyl. It is an isothermic air sampler. The solution has been approved by the government commission. Thirty models of such instruments have been manufactured for installation at the AES and in Chernobyl, and a large consignment is almost ready--they will be distributed throughout the 30-km zone.

One could go on and on about the work of the "Chernobylites." How, for example, the problem of decontaminating the forest tract adjacent to the station has been solved (the problem of the "rusty forest"), on the work to inspect and decontaminate the former construction base at the AES (storage premises, and assemblies, mechanisms, systems, and ferroconcrete structures intended for the construction of the fifth and sixth power units). How the decontamination of the railroad sidings is being conducted...

From the helicopter I caught sight of Slavutich--the new city for the power workers being built on the left bank of the Pripyat some 40 km from Chernobyl. An extensive network of railroad access lines, big construction depots, and neat 2-story prefabricated houses. About 4,000 apartments will be handed over this year. This is a fine addition to the Zelenyy Mys settlement for tour-of-duty personnel. By the way, right now this settlement continues to grow and improve its amenities--new stores, a house of culture, and a hotel are being made ready for opening, and a vegetable store, a boiler house, and a water works are being built. Military construction workers are also making a considerable contribution to this.

But what of Pripyat's fate? The specialists are still not giving a clear answer to this question. The city has been mothballed; there are services monitoring the status of the utilities infrastructure, buildings, and installations. There is now an entire residential area in Pripyat where the radiation situation in the houses meets the safety norms. On Sportivnaya Street we dropped by the "Lazurnyy" swimming pool. It has been completely cleaned out and is ready to take swimmers.

In principle, many of the houses here are habitable, but the dust storms which can occur in summer in dry weather give rise to apprehension. So the question of resettlement has been deferred for the time being--until the end of all the dust-suppression work planned for the summer.

Staffers of the radiobiological laboratory, under the leadership of V. Kabanov, corresponding member of the USSR Academy of Sciences, have devised a

technique. They have come up with a special solution which they propose to apply--with the help of specially equipped helicopters and motor vehicles--to the sandy surfaces of the soil subject to wind erosion. The polymerizing solution turns into a coating which lets through oxygen and moisture. In addition, the coating contains nutrients and the seeds of fast-growing plants. These will stabilize the sand and create a grass cover.

The first results of this work can already be seen. Certain sandy areas where the turf was removed in the fall are once again green with tender shoots of grass.

When this article had already been prepared for the press I telephoned the operations group headquarters:

"How are things?"

"Fine, " I heard on the receiver. "Yelchaninov's group? They have just been replaced; their vigil has been passed on to others..."

And at the end of the conversation: "Why don't you come fishing. We'll go to the Dnepr, the Pripyat, or the reservoir. You won't regret it."

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CSO: 1800/570

SPRING FLOODS

WEATHERMAN IN KIEV QUESTIONED ON SPRING FLOODS

Moscow IZVESTIYA in Russian 7 Mar 87 p 8

[Interview with M. Skripnik, chief of the republic Administration for Hydrometeorology and Environmental Control, in Kiev, by correspondent N. Baklanov: "On the Eve of the Floods"; date of interview not given; first paragraph is IZVESTIYA introduction]

[Text] IZVESTIYA (No 54) has already written about the situation that has formed in the northeastern Ukraine in connection with the approach of the spring floods. Our correspondent in Kiev met with N. Skripnik, chief of the republic's Administration for Hydrometeorology and Environmental Control, and asked him to speak about the sort of river overflow expected throughout the territory of the Ukraine.

[Answer] The agitation of the people who have turned both to us and to the newspaper's editorial office with questions about the impending floods is understandable.

The moisture reserves have accumulated very unevenly on the territory of the republic. In the Crimea, let us say, there is even less than last year. In the southern oblasts too, we do not anticipate a considerable rise in the level of the rivers, with the possible exception of northeastern Nikolayev Oblast. On the Dnepr and its cascade of reservoirs the flooding will be normal. The west of the republic is out of danger, since there is less snow there than usual.

On the other hand, in Kharkov, Poltava, Sumy, Voroshilovgrad and Donetsk oblasts and in the northeastern part of Zaporozhye Oblast, the situation is truly alarming. The water reserves there are 2.5 to 3 times the norm. The situation requires that all necessary measures be taken to withstand the elements. For example, the level of the Pechenezhskiy and Krasnooskolskiy reservoirs has now been lowered and they are less than half full and ready to encounter a large amount of water.

I also wish to note that the passage of the highest levels for all the rivers is expected in periods close to the average for many years. On the Pripyat and its tributaries, the West Bug, the Ingul, the South Bug and the tributaries of

the middle Dnepr, this is in the second-third ten-day periods of March. At the rivers of the Severskiy Donets basin, the Dnepr, the Tissa and the Prut, this is in the third ten-day period of March to the first ten-day-period of April.

[Question] Nikolay Pavlovich, could the coming floods cause radioactive mud from Chernobyl to wash into the rivers?

[Answer] One of the most important directions of the work entailed in eliminating the consequences of the accident at the Chernobyl AES was carrying out a whole set of hydraulic engineering measures directed toward preventing the spread of radioactivity into the Dnepr river bed. For this purpose, the banks of the small rivers were built up, and they were all walled off with filtering levees, which blocked the penetration of radionuclides, along with rain and snow melt waters, into our main rivers.

In addition, a network of wells equipped with pumps to pump out the contaminated water was set up in the AES area. A wall was also built in the ground, making possible, together with other measures, reliable safeguarding against radioactivity entering the ground waters.

Right now our water is within the norm limits everywhere, but specialists are keeping a watchful eye on its quality. We think that this year's spring water will be normal in both the Pripyat and the Dnepr during the flood period. Of course, all the necessary precautionary measures have been taken. I am, however, firmly convinced that there are no grounds for worrying about the quality of the Dnepr water even for a limited period.

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CSO: 1800/563

UKSSR OFFICIAL QUESTIONED ON EXPECTED FLOOD

Moscow STROITELNAYA GAZETA in Russian 14 Mar 87 p 4

[Interview with V. Tkach, deputy chairman of the Republic Governmental Commission for Combating Elemental Phenomena of the UkSSR Ministry of Land Reclamation and Water Resources, by correspondent G. Dolzhenko: "Pending the Floods"; date and place not given; first two paragraphs are STROITELNAYA GAZETA introduction]

[Text] On the calendar it is the middle of March, but winter is in no hurry to turn over its rights to spring, and hurls new snowdrifts one after the other. It has never before been so lavish with snowfalls and blizzards. If there is a great deal of snow, there will be a great deal of water. What sort of spring flooding is anticipated in the Ukraine, how have they prepared for it in the outlying areas, will there not be surprises? Such questions are frequent today in letters to the editors.

Our correspondent G. Dolzhenko asked V. Tkach, deputy chairman of the Republic Governmental Commission for Combating Elemental Phenomena of the UkSSR Ministry of Land Reclamation and Water Resources, to answer them.

[Question] Vasiliy Nikolayevich, what sort of situation has formed today on the rivers of the Ukraine?

[Answer] Let us begin, not with the water, but with the dry land. Snow covered the entire territory of the republic. True, it was not evenly distributed. While in the west and in the central section, the snowfall was within the norm, in the south and east it was two-four-fold above the norm.

Above-average spring flood levels are expected in the river basins of the Azov area of Severskiy Donets and in the tributaries of the middle and lower Dnepr.

[Question] How does the present situation look, as compared with observations of many years?

[Answer] Let us say, the greatest heights of the spring flood waters of the Dnepr in the Kiev area in the last 70 years reached 60 cubic kilometers only in 1931, 1942 and 1970.

The consequences of weather deviations can be judged by 1985. As the result of melting snows in a number of southern and eastern oblasts, thousands of apartment houses and national economic objects were flooded and partially submerged and considerable material damage was incurred. That is why all the necessary measures are being undertaken today to prevent a similar occurrence in this year's spring flooding.

[Question] It would be interesting to know what these measures entail.

[Answer] In each oblast we determine the zones of probable flooding and which of the population centers, enterprises and kolkhozes are subject to evacuation and to where. Equipment, including helicopters and amphibious vehicles, is being concentrated and commodities and fodder, fuels and lubricants and floating devices laid in. The construction organizations are completing the fill for the levees and the erection of other protective structures. Wherever the highest waters are expected, the work is intensive.

[Question] Vasilii Nikolayevich, the readers are asking: Will radioactive dust from the 30-kilometer zone around the Chernobyl AES enter the rivers and reservoirs along with the snow melt waters? Will this spring's floods affect the quality of the drinking water, particularly for Kiev citizens?

[Answer] The people's anxiety is in general understandable, but there are no serious grounds for it. As is known, a whole set of operations for environmental protection were carried out when the consequences of the accident were being eliminated. On the Pripyat and other rivers, and at the Kiev reservoir, water-protection structures and special traps to retain contaminated sediments have been erected, the AES industrial area has been banked up, with an anti-filtration wall built around it, and drainage wells have been drilled. This is reliable protection of the water against radionuclides.

In addition, many scientific and economic organizations constantly monitor the condition of the water. These include the republic's Ministry of Land Reclamation and Water Resources, Ministry of Health and Ministry of Housing and Municipal Services, the Moscow Institute of Applied Geophysics and the Leningrad Hydrometeorological Scientific Research Institute. Scientists of the UkSSR Academy of Sciences have even created a mathematical model of the future spring flooding.

[Question] The last question. What advice would you give to farm and soviet workers now, when everything, it would appear, is ready to meet the high waters?

[Answer] According to our information not all the oblasts are identically prepared for the spring floods. Everything must be thoroughly rechecked and every detail accounted for.

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CSO: 1800/563

SPRING FLOODS IN CHERNOBYL AREA FORECAST

Kiev PRAVDA UKRAINY in Russian 14 Mar 87 p 3

[Article by V. Tkach, UkSSR minister of Land Reclamation and Water Resources, and N. Skrypnik, chief of the Ukrainian Republic Administration for Hydrometeorology and Environmental Control: "What Will the Spring Water Be Like?"; first paragraph is PRAVDA UKRAINY introduction]

[Text] Spring is here. True, the frosts are still crackling. But the sun warms with increasing strength, and the spring freshets are beginning to stir rapidly. What will this spring be like--amicable or not, with high water, pouring forth, or prolonged, with slow thawing?

According to data from the USSR State Commission for Hydrometeorology and the Ukrainian Republic Administration for Hydrometeorology and Environmental Control, spring high waters from average, close to the norm, to high, exceeding the average yearly amount by a factor of 1.5 to 2, are expected on the rivers. In the east of the republic: in Voroshilovgrad, Donets and Kharkov oblasts, and in the basins of the Severskiy Donets and the rivers in the Azov area, larger overflows of the rivers are predicted, and the discharges of water in the Severskiy Donets river may exceed 1000-1200 cubic meters per second, or 2.5-fold above the norm. To diminish the flooding zones, the main regulating reservoirs here have been reduced to minimal volume, in consideration of the fact that when the peak high water is passing, some of the runoff could be accumulated, and the maximal discharges lessened.

A great deal of high water is expected at the Samara, Sula, Psel and Vorskla rivers and their tributaries. Rising ground waters in villages in Zaporozhye, Dnepropetrovsk and Kherson oblasts are possible.

At interdepartmental conferences at the UkSSR Ministry of Land Reclamation and Water Resources, work systems were examined and approved for reservoirs in the basins of Severskiy Donets and the rivers of the Donbass and Krivorozhye, as well as the reservoirs of the Dnepr cascade.

In all the oblasts and rayons, special commissions were created at the ispolkoms of the local soviets of People's Deputies to combat flooding. Emergency materials have been delivered and drainage devices have been readied. At administrations of land reclamation systems and reservoir operation, special emergency-rescue brigades have been formed and means of transport and mechanisms have been put at their disposal.

We are not, however, justified in expecting the peaceful passage of the high spring waters to be ensured everywhere on the rivers. Where the architectural-planning services of the ispolkoms of local soviets of people's deputies do not implement proper monitoring of building up the territories, particularly on the lower, flood plain sections, flooding of structures is possible. Here there must be preliminary plans, and if necessary, assurance of the prompt evacuation of the people and animals and material values being removed. All of these sections should be taken under special supervision by the antiflood commissions.

On the rivers, ice from 20 to 45 centimeters thick still holds on. When it pushes, bridges and hydraulic engineering structures, in particular ponds, of which there are over 24,000 in the republic, can be destroyed. The ice near the hydraulic engineering structures must be broken away, and their hoisting mechanisms put into working order.

For the reservoirs of the Crimea, the operating conditions will be established at the end of March to the beginning of April, after the water management situation has been stabilized. It can already be said that in 1987 the oblasts are not threatened with a "water famine"--all the reservoirs will be full of water.

The main high water on the river Dnepr is formed above Kiev--on the Pripyat, the Upper Dnepr and the Desna. Despite the fact that the snow reserves in this zone are almost 2-2.5-fold greater than the norm, the spring high water is expected to be as usual, with the exception of the Desna basin, where it may exceed the norm by 15-20 percent.

In consideration of the fact that the spring waters of the Upper Dnepr, the Pripyat, the Uzh and their tributaries will flood the bottom lands, including parts of the contaminated area of the Chernobyl AES, the UkSSR Academy of Sciences, with the participation of the USSR Goskomgidromet, the UkSSR Ministry of Health, the UkSSR Ministry of Land Reclamation and Water Resources and other interested ministries and departments have made special studies and compiled a forecast of the water quality in the Kiev and other reservoirs of the Dnepr cascade.

As has already been reported in the press, as far back as July-October 1986, special protective dikes and filtering dams, which will purify the water as it passes through them, have been constructed in the contamination zone of the Chernobyl AES territory. So-called "traps" have also been created, in which the bottom sediment will be retained.

Taking into consideration the fact that on the tributaries of the Dnepr below Kiev the spring high water will occur earlier than on the Pripyat and Dnepr rivers, as well as in accordance with the forecast of the water quality made by the Cybernetic Center of the UkSSR Academy of Sciences, the interdepartmental conference, with the participation of scientists and specialists, reviewed and confirmed, in February of this year, the conditions for throughput of the spring high waters in the cascade of Dnepr reservoirs, on the basis of guaranteeing the water quality. It is specified that the Kakhovskoye and Kremenchugskoye reservoirs be filled from the flood runoffs of the Psel, Sula, Vorskla, Ros and other rivers.

All these measures make it possible to ensure uninterrupted water supply for the population and the national economy in the Dnepr basin.

The passage of the flood, which will take place on the Dnepr River from April to 1-10 June, and the prevention of radioactive contamination of the waters will be constantly monitored by government commissions of the USSR Council of Ministers and the UkSSR Council of Ministers.

On the Southern Bug River, the spring high waters are expected to be close to normal. Here too, however, we must be attentive. The ponds, reservoirs and other hydraulic engineering structures must be prepared in time for the flood passage. This pertains above all to Vinnitsa and Khmel'nitskiy oblasts, where there are regulating reservoirs and drainage systems.

On the Ingulets River, in the Krivyy Rog zone, and on the Saksagan River, the snow reserves are such that if additional measures are not taken, the city of Krivyy Rog might be flooded, as well as the population centers located on the river flood plains. The main regulating reservoir here is the Karachunovskoye, with a volume of over 300 million cubic meters. It already has a free reserve of over 170 million cubic meters, and by 15-20 March will be ready to receive 200-210 million cubic meters of flood waters, which will make it possible to reduce the flooding in the Ingulets River flood plain.

On the Dnepr, the spring high waters are expected to be within the limits of the norm. On the Prut and Seret rivers and their tributaries, if there is a sharp rise in temperature, the waters may flow out onto the flood plain. Particular attention is paid here to the ice situation, since the jamming when the ice pushes may cause local flooding. In this case the ice will be broken up by blasting.

According to the data of the USSR Goskomgidromet, this year considerable high spring waters are expected on the Danube River. Water-protective embankments have been constructed at the Soviet border section of the river from Reni to Izmail, and they can protect the territory if the waters in the Danube rise by 4.5-5 meters. At the section from Kiliya to Vil'kovo, only the land is protected by dikes, and therefore the population centers here will be flooded and partially submerged. In connection with this the Odessa Oblast Commission on Combating Natural Disasters should work out a plan of evacuation from the flooded territories for the population and national economic objects.

On the Carpathian rivers, the spring high waters are expected to be close to the norm. In the last few days, because of the rise in temperature, the snow reserves were reduced and are not over 10-20 centimeters. The Transcarpathian Oblast Production Administration of Land Reclamation and Water Resources has established communication with the water management services of the Socialist Republic of Romania, the Hungarian People's Republic and the Czechoslovak Socialist Republic on joint trouble-free passage of the spring high waters along the Tissa, Latoritsa, Batar and other border rivers.

In conclusion it should be noted that where a great deal of attention is paid to organization and discipline, and where all the services, beginning with the

communications and ending with the duty brigades, are tuned up as for battle, no flood, not even the greatest, is feared. Party and soviet organs are doing a great deal of work to prepare enterprises, organizations and the population for organized throughput of the spring high waters in Voroshilovgrad, Donetsk and Kharkov oblasts. More attention should be paid to this work in Poltava, Zaporozhye and Dnepropetrovsk oblasts.

The Ministry of Land Reclamation and Water Resources has created a special commission for this critical period, headed by the deputy minister, as well as an efficient dispatcher service to regulate water use. Such commissions have been created in each oblast production administration of land reclamation and water resources, as well as in operations administrations, construction boards of directors and other subdivisions of the ministry.

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CSO: 1800/564

SCIENTISTS COMMENT ON DANGERS OF MELTING SNOW

Moscow PRAVDA in Russian 26 Mar 87 p 6

[Article by V. Kotlyakov, corresponding member of USSR Academy of Sciences, and D. Oreshkin, candidate in geographical sciences: "A Bridle for the Snow Dragon"; first paragraph is PRAVDA introduction]

[Text] In Moscow the spring snow that has turned black looks completely harmless. The farther south it goes, however, the greater the alarm it is now arousing among specialists. In the Ukraine they are getting ready for heavy floods. They are hastily reinforcing the protective levees and embankments around Chernobyl. A critical situation has developed in the Caucasus, where the mountains, overloaded with snow, are threatening slides, mud flows and floods.

Reports of disastrous frosts and snowfalls have come in from the United States, France, the FRG and Hungary. Even in Greece and Turkey the snow accumulations reached the proportions of a natural disaster. People perished, houses were destroyed and the transport flow was knocked out. What is this--an abnormal year?

In the Caucasus, thousands of families were evacuated from the disaster zone. Hundreds of kilometers of highways were broken up or buried under avalanches. Snow drifts cut off from the world mountain villages and whole areas in Svanetiya, Tushetiya and Gornaya Racha. Newspapers made flashing references to precipitation exceeding the norm ten-fold, snowfalls lasting 46 days and monstrous avalanches where no one expected them.

Facts must be separated from emotions. People have been facing avalanches for thousands of years now, and have accumulated quite a bit of experience. As early as the seventh century, the Buddhist monk Xuan Jiang, after traveling through the Pamirs, rightly called them "snow dragons." There are legends about their treachery and might. But to allude to the unprecedented weather conditions of last winter is to simplify the problem and transfer part of our general responsibility to nature. No matter how threatening the elements are, they are subject to certain conformities to an established natural law.

The snowfalls in the Caucasus were not continuous, but in two waves--at the end of December--beginning of January and then, after a break, at the end of

January. The data on their intensity are incomplete and contradictory. In general, the total depth of the snow was scarcely over two-three-fold more than the norm for many years. The wind, which piles up the snow in the irregular areas of the mountain slopes, creates the illusion of a multiple increase in depth. Sections with critical amounts of snow deposits develop--they are called avalanche accumulations. From here the "snow dragons," crushing concrete and steel, break away into the valleys.

There is a remarkable fact: in Svanetiya, hundreds of houses were destroyed, but not one of the 320 famous Svanetiya towers, built in the 12-13th centuries, suffered. The structures located next to them also remained whole, or experienced minimal damage. As a rule, avalanches did not reach the sections of the ancient developments such as the historical center of Mestiya, the capital of Svanetiya. The new structures received the blow.

The ancient builders chose sites above which there were no avalanche accumulators. No matter how the weather behaves, the snow here cannot build up a "critical mass" and collects in the valley in small, relatively safe amounts. As A. Borunov, associate of the Institute of Geography of the USSR Academy of Sciences, just returned from the area of the natural disaster, noted, the Svanetiya towers were turned, with respect to the local features of the slope, so that the pressure of the snow swell always falls to the angle of the structure. They act on the principle of an avalanche cutter. It must be said that, according to the data of historical geographical research, the time when the towers were constructed was distinguished exactly by a chilly and humid climate with abundant snowfalls.

There is another professional observation from the disaster zone. The avalanches came down approximately 1.5-fold more often from the slopes along which the highways were laid than from the untouched rims of the valley. Apparently, the builders have disturbed the shape of the mountains and the natural balance between the arrival and discharge of the snow. In addition, it was right here that the road builders, over a period of ten years, took timber to repair and reinforce the road bed. The snow, which had formerly been restrained by the trees, now slides unhindered along the bald slope. Incidentally, the emergency by-passes around the avalanche slide rocks are being built, this time, out of logs cut right here. In eliminating the consequences of some avalanches, the builders are opening up the way for others.

Let us sum up the preliminary results. In the first place, this winter's climatic conditions were not really so unique. They were a repetition of the distant past, and the comparatively recent past.

In the second place, the avalanche attacks are not random. There are sections and territories inaccessible to them where the risk is minimal. In the third place, the damage from the snow danger can (and must) be noticeably diminished if attention is paid to the accumulated experience and scientific recommendations.

This must be spoken about in more detail. Since the middle of the 1960's, when systematic satellite studies began, a gradual expansion of the seasonal

snow covering has been noted in Eurasia. In some years the areas covered with snow were 20-25 percent larger than usual. This is a very large amount. It has been reflected in the substantial increase in the water content of the rivers and the rise in the level of the Caspian and other basins of the temperate zone.

The changing natural situation makes one recall the idea of comprehensive study and utilization of the snow covering advanced several decades ago by Soviet geographers. Here is a simple example. The railroads are protected from the drifts by special forest strips. It often happens that blizzards blow the snow from the surrounding fields and pile it up in the planted area alongside the road bed. The snow banks build up right along the roadway, and in spring the overflow of snow melt water leads to the destruction and deformation of the road bed fill. It would be more sensible to restrain the snow right at the field.

The snow dynamics are not governed by the departmental interests of the agro-industrial committee and the railroad workers. There must be coordination of actions. The time has come to think about creating an all-state service to track the snow cover, supported by widescale drawing in of information and computer data bases. The problem of reorganization and, more precisely, the creation of a new avalanche service, as has been done in a number of countries, has become particularly urgent.

For example, in Switzerland a simple avalanche map of the country was drawn up. The zones where all construction is prohibited are marked on it in red. The avalanches there come down regularly and no less often than once every few years. In the blue zone there is a probability of avalanches--once every few decades. It is prohibited by law to erect municipal and state institutions here. Finally, the white zone is safe and open to all construction.

The storehouse of geographical science has many means of controlling and combating snow danger. There must, however, be an alignment of the system of exchanging experience, training and giving refresher training to specialists and improving the instrument base and work coordination at the mountain stations. Suffice to say, the information from the sparsely located observation points in Svanetiya began to report disturbances as early as the first wave of deposits. After the second one had passed, it proved quite difficult to evaluate the scale of the disaster and the actual flood threat. There was a critical shortage of qualified specialists and water- and snow-measurement data, not to mention implements to release the avalanche.

There were also threatening snow masses hanging over the thickly populated valleys on the other side of the Caucasus ridge. Here, however, experienced mine rescue workers promptly demanded evacuation of the population and were able to relieve the situation, having let the largest avalanches fall earlier. They managed to reduce the losses to a minimum. With more correct location of the tourist complexes, however, they could have been avoided entirely.

... A few years ago, construction workers turned over a new hotel by the end of the year at Sakhalin. By January it had already been whisked away by a snow

slide. The planners had chosen a beautiful glade at the foothills of a mountain, amidst century-old spruce trees, for the building. It is just such bare places in a mountain forest that serve as characteristic signs of an avalanche, which falls once every few years and destroys the young growth. In this case, it made itself wait only a few days

The point lies not only in avalanches and villages. The construction of any object, particularly a large one, requires preliminary ecological-geographical expertise, and not just in the mountains. The mountains merely point out, most severely and obviously of all, errors in selection.

12151

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FLOOD COMMISSION CHAIRMAN INTERVIEWED

Moscow IZVESTIYA in Russian 15 Apr 87 p 2

[Interview with V. Arinchenkov, first deputy chairman of the oblispolkom, chairman of the Flood Commission, V. Tkach, deputy chairman of the republic's Flood Commission, UkSSR Minister of Land Reclamation and Water Resources, and M. Mukharskiy, deputy chief of the Main Administration of Sanitation and Epidemiology of the republic's Ministry of Health, at Kiev, by correspondents S. Troyan and N. Baklanov: "The Pripyat: The Flood Peak Is Behind Us"; date of interview not given; first paragraph is IZVESTIYA introduction]

[Text] ... Quite recently they could scarcely manage to deliver mineral waters to the food stores in Zaporozhye. "Zaporozhskaya" and "Melitopolskaya" were bought up by the case. In order to satisfy the demand that had suddenly grown so sharply, the trade workers had to take mineral water from the stocks readied for summer. Someone even "bottled" ordinary drinking water.... What is the matter here? This was the "reaction" to the false rumors that "contaminated" water would come from Chernobyl with the spring floods along the Dnepr, and, according to hearsay, radiation could enter from the AES area. Specialists' explanations, however, published in the local press and heard on radio and television, have dispelled the ugly rumors....

[Answer] "We have, however," said V. Arinchenkov, first deputy chairman of the oblispolkom, chairman of the Flood Commission, to our correspondent S. Troyan, "carried out most detailed preparation for the high waters. The first section of the final purification structures, worth about 11 million rubles, has been erected at the two Dnepr water intake stations in under four months. Now (beginning on 15 April) the apartments of the Zaporozhye residents are receiving even purer water than before. Twice a day, associates take a water sample from the Dnepr. It naturally meets all the norms and requirements."

What is the state of affairs in the Chernobyl AES area? IZVESTIYA (No 66) has already reported on the radiation situation in the water landing areas of the Pripyat and Dnepr rivers in connection with the spring high waters. All the same, at the readers' request, we are returning to this subject. N. Baklanov, our correspondent in Kiev, met with V. Tkach, deputy chairman of the republic's Flood Commission, UkSSR minister of Land Reclamation and Water Resources, and with M. Mukharskiy, deputy chief of the Main Administration of Sanitation and Epidemiology of the republic's Ministry of Health.

[Question] Vasiliy Nikolayevich, how effective have the protective measures, directed toward averting the spread of radioactive contamination from the area of the Chernobyl AES by water, proved to be?

[Answer] IZVESTIYA has already told of the measures adopted in direct proximity to the nuclear power plant--creating a protective screen from the wells around the cooling pond, constructing walls in the soil, making it possible, in combination with other measures, to have reliable protection against the spread of radionuclides. I will therefore dwell on the hydraulic engineering structures that were created in the Pripyat and Dnepr river beds.

One of the main ways of spreading basin contamination is the movement of silt. In connection with this, four "traps" were built at the Kiev reservoir and on the Pripyat to contain it. The system of these structures is as follows: the bed of the reservoirs is partitioned off with underwater dams several meters high, and broad depressions--up to several dozen meters--are formed in front of them. The "traps" are actuated as follows: the current, thrusting against the barriers, slows its course, and the silt settles into the depressions prepared for it, where, in time, it is preserved. In order for the readers to be able to imagine the dimensions of these objects, I will say that, in constructing just one of them--in the Ivankovo area--about 4 million cubic meters of soil were excavated. Immediately after the building of the first "trap" we were convinced of how highly effective they were: often the water, after passing through it, proved to be 100-fold purer than higher up stream, although even that met the standards.

In addition, I wish to remind you that to prevent radiation sediment washing into the reservoirs along with the rains and snow melt waters, their banks were shored up, and 131 dams and a filtering dike were constructed on the small rivers.

We, of course, observed all these hydraulic engineering structures with particular attention during the flood passage period--the people keeping a 24-hour duty watch and all the necessary equipment were ready. Because of the slow thawing of the snow, however, the rivers behaved very peacefully, and no emergency measures were needed to reinforce the dams. The peak of the floods on the Pripyat and the Dnepr in the Kiev area has already passed.

[Answer] "From the moment of the accident at the Chernobyl AES, the quality of the water has been under constant observation," says M. Mukharskiy. "The high spring waters caused no unpleasant excesses. In connection with this, the republic's sanitary and epidemiological service is imposing no restrictions: in Kiev it has not been necessary to convert to artesian water supply, and at the beaches, with the coming of warm weather one can relax and swim peacefully. All this, of course, also pertains to cities downstream on the Dnepr."

12151
CSO: 1800/563

REVIEW OF PREPARATION FOR SPRING FLOOD

Kiev PRAVDA UKRAINY in Russian 5 Apr 87 p 2

[Article by A. Sokol, PRAVDA UKRAINY correspondent: "Pure Water: Chernobyl Today"; first paragraph is PRAVDA UKRAINY introduction]

[Text] The republic is awaiting major floods. In the basin of the rivers of the Kiev area, the water accumulation in the snow is 1.5-2-fold greater than normal. The high waters will not take us by surprise, however--we are ready for them. It is something else that makes many people anxious. Will the consequences of the accident at the Chernobyl AES affect the spring waters? What has been done so that the water is pure?

As early as May of last year, when Chernobyl, it seemed, was busy with the one-and-only barrier protecting the people from the destroyed reactor, a serious struggle was being waged in the depopulated town of Pripyat to prevent possible post-rain radioactive silt from entering the reservoirs. Everyone realized that rain might pour down any minute--it does not fall on order. The misfortune had to be averted. One can remember the sigh of relief of V.T. Kizima, at that time chief of the AES construction administration.

"Things are finally under control," he reported with satisfaction. "The city's storm-drain discharge has been suppressed. Tanks have been installed and they are extending the pipeline--if necessary, the wash-away can be pumped off...."

They took on the task of protecting the purity of the water immediately after the accident. The first earthen banks were raked together right at Chernobyl--on the town street, running steeply down to the river. The reports of the government commission invariably repeated: the reservoirs are being banked up. Wells have been drilled in the lowlands.

Simultaneously a battle was being waged in the sky. Operators wearing oxygen masks and fur clothing were rushed at the airplane-laboratory to any clouds appearing. This airplane, as a rule, averted fallout over the AES zone.

Meanwhile, scientists and designers were thinking about major water protection--on the earth's surface and in its crust.

The surface barriers were simple, and it would not be complicated to build such objects. This was only the way it seemed, however.

There are numerous intermittent and imperceptible streams around the AES. They swell during the flood and rainy season. Washing away cannot be avoided and run-off cannot be stopped. In some places they decided to restrain it so that the water would remain, and in others--to pass it through filters. But where to apply what method? How can this be done?

Ukrgiprovodkhoz was entrusted with answering these questions. The collective there is experienced, but there was some agitation: the assignment was an extremely responsible one. The UkSSR Ministry of Land Reclamation and Water Resources was drawn in. A group of 40 engineers performed the work directly.

"For the designers the chief difficulty lay in the unusual nature of the structures," says V.A. Mikhaylovskiy, director of the group. "Everything was new, and there were no specific recommendations or regulating documents...."

The places that appeared dangerous were inspected from a helicopter, and measured in steps. Here a levee was required, in another place--a dike, in still another--a dam. While they were determining where and what, there was another, no less difficult search. Material retaining radionuclides was required for the dams, and moreover, not expensive material. They found it and tested it. The Zakarpatnerudprom Association had to produce this raw material and ship it: not a motor vehicle, not a railroad car--over 60,000 cubic meters. The demand for rock was incomparably great.

You do not surprise construction workers with the scale of a job. Even they, however, managed to be amazed: the total "chain" of dams reached 40 kilometers. Everything had to be built before autumn, and July was approaching.

They built all night long. At night the fellows would sound an alert--a load had arrived. Most often this was rock. In M.N. Kachan's detachment, the motto originated: "Do Everything To Sleep Peacefully." The point was not only the reliability--the rates were no less important: the barriers had to be up before the rains. The collectives headed by Ye.V. Yurchenko and V.M. Dudkin also well understood this.

The planners spent the days and nights in field tents. The construction workers knew A.S. Sinevich, N.L. Zorya, P.N. Levy and V.F. Morozyuk by sight. V.A. Mikhaylovskiy, director of the group, would disappear at the projects: it would happen that the plans would change in the course of the work. This was a time when the authors of the plan did not leave their "child" to the mercy of fate.

They covered any channel--natural and artificial, large and small, hidden and obvious....

Those going into Chernobyl, perhaps, did not even suspect that the Bezymyanny stream lies through the village of Zalesye. The bridge thrown across the dried-up channel was little spoken about. But the specialists knew: water sometimes flows here, and directly into the Kiev reservoir. Therefore, they built up a stone barrier--a semicircular dam. The materials laid varied, by layers, in the necessary proportions. There is a filter.

The Bragnika River in Belorussia overflows like a sea during high waters. They know about this in Ladyzhichi. It took about two months to build the dam here. The equipment gnashed its teeth and rumbled from dawn to dusk. An almost 500-meter dam was required.

The fill at the Sakhan River extended almost seven kilometers. This is the largest barrier. The rest are far smaller, but many of them were required.

Some 131 water-protection structures were erected on the earth's surface. Everything was turned over on schedule, at the end of September. The first autumn rain fell on the day that the report of their readiness was given. They did not hurry in vain.

In addition to the surface water-protection structures, deep ones were also required--in the earth's crust. There were special barriers here. It was more complicated to build them.

The ground wall aroused special concern--over 2 kilometers long and 30-32 meters deep, to the confining stratum of clay. Nothing so immense had ever been built before. It is the deepest in the world. The building periods were fantastically reduced.

A council was held in Chernobyl. N.V. Dmitriyev, chief of the All-Union Gidrospetsstroy Association, cut short an official foreign business mission. Administrative directors flew in from all over the Soviet Union.

Unusual, high-powered trenching machines were needed, and there were none.

Specialists urgently sought a country that had the needed equipment. Their hopes, however, lay on a different course.

Kiev designers had by this time perfected a trenching machine, and they succeeded in manufacturing it in Zaporozhye. All of its parameters were suitable. This was an experimental model, however. They decided to combine testing and production.

The tests were developed at the walls of the AES, while work was in progress. At first, however, the 80-ton machine had to be brought in and assembled.

This fell to the lot of A.L. Zaporozhets from the Dnepr Administration, which is in Vyshgorod. The assembly had to be carried out close to the damaged reactor, under field conditions. Ivan Pilipenko, Boris Martynenko, Nikolay Chevguz and their comrades did, it would seem, the impossible....

At the same time, about 300 Sovavtotrans motor vehicles moved across the border. Several columns transported imported trench-digging units from there. The urgent loads were given the "green light." The implacable customs officials agreed to simplify the formalities, reducing them because of the time en route. From the border the equipment went straight to the work place.

As was later revealed, they could have done without the foreign purchases--the "back-up insurance" was superfluous. Our units proved to be twice as powerful. They were manufactured in almost a month: about 30 plants in the country fulfilled the order.

A great deal of parallel work was done. They supplied, and what is more, created the necessary equipment--and trained the personnel for it. They planned and they built. They sought clay capable of being turned into a barrier for the radioactive "mud." There was more than enough of it in the country, but it was important to get it from nearby. What did they do? They opened up a quarry in time, 17 kilometers away.

They worked around the clock. The routine for Gidrospetsstroy was a customary one. The difficulty lay in the radiation situation. Army chemists laid and decontaminated the route. They put on respirators, however, and the shifts were shortened, six-hour ones. After each one the equipment was cleaned so that the "mud" would not accumulate.

The Chernobyl wall in the soil in many ways required unusual approaches. It was complicated, the specialists note, to dig a narrow and unprecedentedly deep trench in the sand: it kept collapsing. Indeed, it was not only a question of the slit trench--the structure. Those who solved the problems arising in construction of the largest GES in the world--Bratsk, Krasnoyarsk, Sayano-Shushenskoye--were sent here. They found the necessary technology.

N.G. Selivanov, director of the construction operations staff, who came to Chernobyl twice for special duty, about which nothing was said, admired the people.

"Just imagine," he said, "not once did I encounter dissatisfaction, especially shirking, and the conditions were akin to front-line conditions...."

F.F. Golovan, chief of the Volga Administration, is a veteran. He arrived at the first summons and worked here almost a month. The collective was mastering a new machine, and there were malfunctions. Fedor Ferapontovich could be found on the line from morning to night. Once, while inspecting a unit, he fell down a manhole. Afterwards he went on, limping. But he did not leave the job and did not complain.

The Volga Administration subdivision achieved record output. The people there were well-matched. Machine operator Dmitriy Karmukhin, high-speed tunnelling foreman, helped those arriving to master the equipment--he worked and taught others. Sergey Ivanov, chief of the section, broke off work at Chernobyl in only 20 days. Machine operator Dmitriy Ponovarev went to any assignment, without hesitating. One does not remember all the names, but can only name the construction administrations--the Ural, Uzbek, Volgodonsk and Kamsk.

The unique project was erected in less than three months. Under ordinary conditions, specialists assert, it would have taken three years.

The underground dam covered the ground waters flowing from the direction of the damaged power unit to the Pripyat River. A huge monolithic barrier rose in the path of the "mud." It rose ahead of schedule, by the first of September.

The second method of underground water protection consisted of drainage wells. Stretched out in a line, they serve as radioactive water collectors. It appears and pumps draw it out along pipes for purification.

This work did not cause technical difficulties. But it was not exactly easy. The work line, as everywhere, was laid by radiation supervisors. A well is a structure. It does not only penetrate to the confining stratum of clay. A pipe, so to speak, with openings must still be lowered into a 30-meter well, so that the water drains through it. Then the pump is installed. It is a hydraulic engineering project! Over 350 of them had to be constructed.

"This was entrusted to PMK [mobile mechanized column] No 19 of the Saratovselkhozvodoprovod Production Association," says O.P. Solenov, latest duty chief of the operations staff of the USSR Ministry of Land Reclamation and Water Resources. "Many subdivisions fulfilled the assignments: from Moldavia, Uzbekistan and Kazakhstan. There were brigades from Moscow, Baku and Krasnodar. The Ukrburvoda automated section was singled out.

The wells are not operating separately. Grouped and connected by a pipeline, they have formed a so-called screen. Glavukrнеftegazstroy, which had to lay about 25 kilometers of pipes, was drawn into the work.

It was also, however, difficult for the drillers and the pipeline workers. In places with a complicated radiation situation they counted on automation. The pipes were welded, for example, with aid of the Styk and Sever units, known throughout the world. But the people ensured the success. Their service lies in the fact that they coped with the pipe-laying in three months instead of the normal eighteen.

By the end of October the entire drainage protection was ready. All the screens! The most extended of them cut off the cooling pond of the AES. After the accident there proved to be radioactive substances in it, and the pond was seven meters above the water level at Pripyat. The drainage barrier eliminated river contamination. The city, located not far from the plant, was cut off by the screens.

Well, though, what will happen if some part of the "mud" still enters the reservoirs?

They have decided to construct underwater traps for this contingent. They were erected in summer, autumn and winter; on the Pripyat River and at the Kiev reservoir. These structures vary--an embankment made of rubble, with a deep, broad depression in front of it, and one single depression, the so-called quarry.

Not far from the special duty settlement for the AES power engineers, Zelenyy Mys, a rubble dam was extended for 450 meters across the channel of the Kiev reservoir. In front of it is a trench: 100 meters wide and 16 meters deep. This is a barrier to the muddy silt.

The last trap was turned over in the middle of March. In February, construction of the powerful northern and southern dams was developed near the cooling pond of the AES. The need for them stemmed from forecasts of abundant spring floods. The construction periods were extremely reduced, but still the work was performed ahead of schedule. Soldiers participating in elimination of the consequences of the accident helped the local construction workers. They successfully coped with the task.

Today there is continuous observation of the approaching high waters. The 30-kilometer AES zone has been singled out into a separate "antiflood" zone. A maximally reliable "shield" has been created here. Special brigades are on duty at the main dams and dikes. Rubble and sand reserves have been created, and the necessary machines are ready.

During the winter, water was taken for analysis near the dams of the existing streams. The protection is effective--there were no deviations from the health norms. As specialists assert, there are no grounds for anxiety even now.

12151

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HOUSING

HOUSING COMPLAINTS VOICED BY CONSTRUCTION WORKERS

Minsk SOVETSKAYA BELORUSSIYA in Russian 5 Dec 86 p 2

[Article by I. Potapov, Sector Chief, Central Norm Research Station, BSSR Ministry of Construction: "How Can Something Like This Be Profitable?"]

[Text] Living in an inferior hotel is bad. For an hour, a day, or a week.

And for a month?

The above is the length of time the "Yubileynaya" Hotel, located in the town of Zhlobin, will be housing a large group of workers from subdivisions and personnel sections of the BSSR Ministry of Construction who have come to erect residential housing for persons being resettled from the Chernobyl AES area.

Engineers and workers are working in construction during daylight hours. They handle thousands of bricks and cinder blocks, the major component of which is lime. Very fine lime dust permeates their work clothes.

Everyone knows that the builders work in a very dusty environment. Showers and frequent clothes laundering are essential. However, neither is possible under the conditions prevailing at the hotel: there is no hot water. The shower rooms are securely locked and the faucets in the rooms seem to be there merely for decoration.

On top of the above inconvenience, the guests are disturbed by something else: for some reason, the television set is kept under lock and key; for some reason, the long distance telephone line is not functioning; and other items.

When asked the question "Why?", the hotel staff responds in a unique way. They point to a neat frame displaying a brief and attractive certificate attesting to classification of the hotel as a third-class establishment (by order No. 160 of the BSSR housing and municipal service minister dated 19 October 1979). This certificate deprives the guests staying at the only hotel in Zhlobin of essential facilities, the most important of which is hot water. They say that a supply of hot water is unprofitable and wasteful. This is truly a strange decision. How can an absence of elementary facilities be profitable to anyone?

13005

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STUDENT DETACHMENTS ASSIST IN HOUSING CONSTRUCTION

Minsk NARODNOYE KHOZAYSTVO BELORUSII in Russian No 1, Jan 87 pp 32-34

[Article by I. Gerasyuk: "Special Attention Zone"; first three paragraphs are author's introduction]

[Text] No one expected such a calamity. It occurred suddenly and required immediate action. One week after the accident at the Chernobyl Nuclear Power Hydroelectric Power Plant, tens of thousands of persons were forced to abandon their homes. But there was no fuss or panic. Essentially the whole country rose to the task of eliminating the consequences of the accident. The children of the Gomel region were warmly received by pioneer camps and sanatoria of the Crimea, the Caucasus, Russia, Lithuania, and the northern rayons of Belorussia. Contributions from all parts of the Soviet Union were sent to Bank Account No. 904 to aid the victims.

I had occasion to meet with many people who left the 30-kilometer zone that passed through the Braginskiy Rayon. They did not lose their presence of mind, but one could read a silent question in their eyes: How are we going to live now? This question was on the mind of the children too who were returning from their summer vacations and who had left their old homes forever and not yet seen their new ones. Priority passage at the railroad stations was given to special trains glowing with red pioneer neckties and simple but sincere placards in the windows of the cars that read: "Thank you Yaroslavl!", "Thank you Artek!"...

The autumn brought an comprehensive reply to this question. There was not a single family without their own living quarters by the beginning of the cold season. This required considerable effort. And the people who did what would have been considered impossible under ordinary conditions, deserve to have their story told, even if it is several months later. And so I open my filled-up notebook...

The numerous tower crane booms that can be seen from any highway have changed the landscape of Budo-Koshelevo region beyond recognition. The population of 24 villages in the rayon will be increased by almost 1,500 families. Among the farms that have accepted new members is the sovkhos Pravda.

A new settlement has emerged on the approach to the central farmstead. The finishing stages have already been completed for some of the homes, and only the foundations have so far been laid for others. It was the end of August and it was drizzling, but no one was sitting on the sidelines. The piles of construction lumber were made lively with work clothes and various signs.

"Students," explained sovkhos director Ivan Timofeyevich Skibunov.

Judging by the time, these fellows should have already completed an exceptionally intensive work semester.

"We could have left," said the inspector commander of the student construction detachment Sergey Aleksandrovich Saltykov. "But how could we? Without us, the construction workers will hardly be able to meet the planned deadline of October 1. And anyway we still have the capacity. We have six detachments from the Minsk Radio Engineering Institute and one from the Belorussian Polytechnic Institute. At a general meeting we made a decision to stay until September 20, just in time for the beginning of classes.

Yes, that student year of 1986 was not an easy one. Particularly for those who were doing carpentry for the first time. They worked 12 hours a day on two shifts. Construction work didn't stop for a minute. And of course there were some vexing moments. The students finished pouring the cement foundations for one series of model homes, and another type of house was delivered. They weren't about to waste time looking for explanations. While cursing the slovenly dispatchers, they merely destroyed what they had already done, and started to pour concrete all over again. They understood that their principal goal was to provide new homes for people.

I don't know about the others, but I, frankly speaking, am even a little envious of the future tenants. They will have bright spacious rooms, gas, central heating, hot water, and a bathroom. If the apartment turns out to be cool, then their own heating furnace can be turned on. The homes will also be equipped with a Russian stove.

Ivan Timofeyevich Skibunov has now driven us further, toward the vacant plots.

"The housing section will only be the beginning," he said. "After that there will be a kindergarten accommodating 90 children, a club seating 300 persons, and a bathhouse-laundry combine."

These kinds of facilities are also being planned for other areas whose existing cultural-domestic and shopping complexes are not sufficient to satisfy the demands of the enlarged population.

The number of workers at the kolkhoz imeni Engels has almost doubled. The kolkhoz is presented headed by Nikolay Romanovich Gulyay who was the previous chairman of the kolkhoz imeni Lenin in the Braginskiy Rayon. He came here with almost a complete staff of workers and specialists. The deputy secretary of the farm's party organization, Nina Danilovna Guzova, is a local person and knows every detail and change that has taken place in the interim at the kolkhoz.

"Now our milk maids are working two shifts and have a day off. We have three milking periods daily. During a two-week period in August alone, we obtained an additional 40 liters of milk from each cow in comparison to the same period last year. The party organization has increased by 17 persons, and the trade union contingent has almost doubled. The new members of the trade union committee have taken up their duties energetically. Every week we have two, and sometimes three concerts," she said. Regular amateur concerts by performers from the rayon House of Culture are given on our kolkhoz stage, and we have had concerts Gomel performers and the oblast puppet theater which gave considerable pleasure to the children. We are planning excursion and tourist trips, rest and trade union sanatoria to be available at no charge."

The new residents of the village of Gubichi do not feel like strangers. Until the new homes were ready, the Bragin residents were put up in the cottages of the local residents. And when the time came to allot the apartments, those who lived in the settlement suburb wanted to settle on the same street so that they could be friendly neighbors.

We somehow never were able to see Nikolay Romanovich Gulyay, the new kolkhoz chairman. He just was at the machine shop, or he just left to check on the hay procurement, or just was at the farm... From morning to evening, constantly "on wheels," just like chief engineer Nikolay Leonidovich Kovalets and his brother Vladimir, an agronomist hydraulic engineer. Both of them also came from the Bragin area and are now in the field day after day. That too is understandable. You cannot learn about the farm from your office.

We did manage to meet his colleague V. N. Povod. He too had previously worked at the kolkhoz imeni Lenin, and now has moved with part of his people to Budo-Koshelevshchina where he has become the deputy board chairman of the kolkhoz Avangard.

...The village of Staraya Buda, like probably thousands of Belorussian villages, is beautiful in its own right. A long narrow street quaintly winds along rows of shaded trees. Nestled under thick crowns of lime trees is the rural club and the continuous green hipped roof of the administration building. Two new streets have emerged quite nearby. White and neat-looking buildings stand erect along the asphalt street. These streets do not yet have any trees, flowers, or lawns, but little rascals are already running in the puddles, children's voices ring in the air, and ducks are standing on the new porches, and ubiquitous little boys were quick to discover surrounding carp ponds.

The owners of the first house on the as yet unnamed new street have hung a poster reading "Peace to your home!" and have drawn a horse-shoe which is traditionally supposed to bring good luck. Many apartments have not yet been occupied, but even in the ones that are still empty, one senses the hand of the future occupants. Standing on the window sills are bouquets of autumn flowers, and the living quarters are rendered habitable by the ever present companions of new dwellers -- cats. True, these are not yet cats, but just kittens, but that's how life begins.

The new resident Vitaliy Anatolyevich Vysochanskiy unexpectedly greeted us with a complaint:

"The roof leaks!"

In response to our asking him what his vocation was, the new owner answered:

"I work in a construction crew." He then became embarrassed, and said "I'll fix it myself."

Characteristic of any new settler is the desire to receive everything "spick and span" as they say. Complaints are made to the builders even about small things, even to the point of crookedly driven nail. But these new streets and houses are a special case. The pace of construction was unprecedented. One doesn't notice every little crack. The point is to get people settled before the cold season. So the attitude "I must have" is hardly appropriate here. All of us together must overcome a common catastrophe. Surely, we know that the best specialists from Gomel and Minsk, Brest and Grodno, Vitebsk and Mogilev came to the construction sites. They worked out of compassion, without thinking of themselves, and without any extra pay.

The above complaint was the only one we heard and was expressed most probably out of old habits. But life has been emerging around us anew.

The kolkhoz board decided to distribute the apartments just as construction had begun. The future occupant is not only the best possible inspector, but also the best possible assistant. Some might like to paper a room differently, others might have some different thoughts about equipping a shed or cellar...All of this done at once so nothing would have to be redone later. Housing space was also allocated in a new way. A special commission was elected at a general trade union meeting of the kolkhoz farmers who left the kolkhoz imeni Lenin of Braginskiy Rayon and who became members of the Avangard kolkhoz. The commission took a number of factors into consideration. These included family size, labor services performed, previous neighborhood, and psychological compatibility if persons living alone were offered housing space in a single cottage. The first people to get settled were those families with many children. The specialists, i.e., those regarded as the leadership, were one of the last to occupy the new homes. That was their very own decision.

The adults' view of the new life is dictated by the problems of getting settled and providing for their families. The children's view is candid and direct. They looked at us with cunning curiosity from behind the brand new window blinds, and we talked about them.

"I, of course, am seeing that everything is in order. The children like it very much here," continued V. A. Vysochanskiy, "especially the apartment. And the village, of course. They have already found a fishing spot. I'll go with them as soon as I have the time. I have four children."

His neighbor combine operator V. A. Semikhod also has four children. But his family has not yet moved from their temporary quarters.

"I'll go the rayon center, get money from my savings account and bring all the necessary furniture for the whole house, so I don't have to worry about any of that later," said Vladimir Alekseyevich.

The state has done everything it could so that the victims of the accident were not left alone to cope with their troubles. In a few months, they will be given free new homes about which they could not even dream of having earlier. They will also be given monetary compensation for incurred losses which at times can amount to 30,000 rubles or more per family, and a full supply of essential domestic appliances and food products.

"Of course, there have been certain complaints," explained board chairman V. N. Povod. "But these have mainly been constructive criticisms. On the other hand, their attitude to work shows how much they appreciate what has been done. They all are working well, as much as is needed, without complaints and reproaches, and without asking for time off or compensation. And we can see the results. The increment in milk yield has been considerable and we are now among the rayon's leaders in forage procurement...

He continued to enumerate the ongoing activities, and in the fitful energetic gestures of a supervisor and in heated hurried expressions one felt that he did not come to this new land as a stranger, and that he would do everything he could to make the land richer, more fruitful, and more beautiful.

He showed us a new street, houses, and farmsteads and seemingly previously seen rows of blossoming apple trees along a well-proportioned fence, brightly colored front gardens, and the asphalted approaches.

One of the commissions which came to Staraya Buda expressed dissatisfaction about the fact that the houses were very similar to each other and could hardly be distinguished, and even requested that original details be acquired for the building facades. But this probably was not the most important thing. Different kinds of people will be living on the as yet unnamed street and on the street that was named Mikhalevskaya at the request of the former residents of the village of Mikhalevka. Each person will design his own garden to his taste, will decorate his front garden with his favorite flowers, and will paint his fence to his own liking. The main thing is that each person has his own home which each person can paint as he wishes.

Any capital city general self service store could be envious of the arrangement at the small food store at the Uz station. Neat rows of canned goods, shelves with bread wrapped in cellophane, the shiny plastic counters. Incidentally, the variety of goods could also be envied. Apples, tomatoes, potatoes, cabbage...the likes of which one does not find in the city sometimes during an entire year. This is for everyone; the supply conditions for those who came from the disaster regions are special.

"The ispolkom of the rural Soviet of People's Deputies provided us with a list of all of the new residents. Each of the residents, including the children, have been allotted a monthly ration of six tins of stewed meat, the standard portion of fresh meat at state prices, cooked sausage, buckwheat and oat groats, condensed and concentrated milk, and other products. Our

confectionery shop and non-alcoholic beverage plant can provide a sufficient amount of sweet rolls, pastries, and soft drinks for our own people and all those who have settled here," said the store manager Valentina Ivanovna Tolkanova."

"That's quite right," confirmed Mariya Semenovna Gritsenok, an arrival from the village of Sloboda in Braginskiy Rayon. "They are taking wonderful care of us. To tell the truth, we have never seen such concern before. The first month we came here, we were fed free of charge at the local cafeteria and we were given a decent amount of money for our priority needs. My husband went to work at the combine and is earning a good wage. There is everything here. We only would like to move into our own home a little faster."

"The semifinished products shop is operating at full capacity," added the director of the association of public nutrition enterprises of the rayon consumers' union Vladimir Ivanovich Krasikov. "We understand that many people still don't even have a meat grinder, and sometimes not even the proper conditions for preparing food. That is why we are offering ground meat, chops, cube steaks, and packaged prepared foods. We've had a great misfortune, but one doesn't have to live in grief all the time. Besides, the worst is already behind us. People do have their family holidays and weddings. We are filling orders for cakes, and we are trying to make our new residents' holidays attractive affairs."

Many residents settled into their new homes at the very beginning of the fall. They didn't think there would be any problem in furnishing their apartment. The state has allocated money and merchandise. The new settlers could buy practically everything they needed at the kolkhoz store at that same Uz station, including nails of all sizes, various colors of paints, wallpaper to suit all tastes, furniture, refrigerators, and many other items.

Store manager Yelena Petrovna Stepanenko said:

"Long before the apartments were occupied, I talked to all the families who came here for permanent residence. I learned how much and what they needed, what kind of washing machines and vacuum cleaners should be brought, what kind of refrigerators or furniture accessories they would like to buy. And, as is known, our orders were given the 'green light'."

The village of Duravichi is situated on a picturesque site. On its streets one can see old, time-worn ramshackle cottages that have long been abandoned but which have accommodated residents for a brief period. Children's swaddling clothes, underwear, and little dresses now dry in the wind in the once empty courtyards. In anticipation of the new settlers, the people try to arrange their own lives as well as they can. But when they cannot they come to the consolidated reception center of the rayon domestic services combine, since it is right there.

"So far our most popular services are linen washing and dry cleaning," explained the manager of the consolidated reception center Lyudmila Prokofyevna Starostova. "But there will soon be a change in service demand. We have already received many preliminary orders for making furniture, and

there will be a greater demand for shoe wear, knitwear, and probably for television repair work."

It is important that people don't have to travel to the other end of the world for services. Technicians were now working on TV equipment in a room set aside for repair work, a barber shop is expected tomorrow, and shoe and clothing styles in the display window could even be selected by customers today.

But so far these items are still awaiting customers. There is a line for other things.

"I came to get a new mattress," Arina Stepanovna Pugach responded to our question. "You see, when we left, we just managed to grab a blanket and pillow. The truck with the ordered merchandise is supposed to arrive soon."

The truck with the merchandise will come and the line of people will dwindle. But there will probably be other lines. The pressure on the domestic services workers has become much greater. However, these difficulties are temporary. As I already mentioned, the construction of cultural-domestic services complexes has been planned for all of the new settlements.

Trucks were racing along the highway between "market stalls" with reddish apples. Now and then a "light passenger car" would pull over to the side the road, and pails of ripe fruit would be emptied into the shopping bags and satchels of shoppers. Fruit was collected without caution. The sanitation epidemiological service did not record any radiation level on the fruit that was above the natural level of background radiation. The fruit was primarily traded on the principle of self-payment, i.e. the customer would take the apples he wanted and then leave the money for them on a stool. This one little detail told much about the character of the people living here.

As we were passing through the village streets we could not help but notice the tastefully and lovingly made well towers. The hand of some artistic carpenter mounted a vociferous rooster and a playful hare on the roof and framed the wall with a cleverly interwoven pattern of wood designs. Of course, the roofs were built over the wells out of necessity so that road dust would not get into the water. But this necessity was arranged in a way that would decorate the unpretentious rural landscape.

Secretary of the Budo-Koshelev party raykom Nikolay Nikolayevich Stosh noted that "That which is done from the heart serves it purpose longer."

And I made a note to myself about the extent to which the party supervisor goes into each detail. That reminded me of another episode from that trip.

As we were leaving the administration building in the village of Gubichi, we met the construction site chief Ivan Viktorovich Davshel from Grodno Trust No. 30. The raykom secretary then took out his notebook:

"What was it that you promised me last time?"

The construction site chief was slightly embarrassed. Last time he promised to turn over the keys to 10 new homes by September 1, but that didn't happen.

"It so happened," he explained, "that the material was delivered late, and we couldn't waste time on "beating the dust" so we erected other buildings. Perhaps it's not any worse to turn over 40 homes by September 10 than to turn over 10 by the first of September."

And those homes were turned over, as I later found out in Minsk. I am sure that the raykom secretary had no small part in that action.

But Nikolai Nikolayevich had already switched over to another problem:

"We are having a difficult time of it now. The dairy and meat production plans have increased in connection with the resettlement of the evacuated persons in our farms. How are those plans to be fulfilled? You know that we did not get any additional cattle. The only solution was to raise the efficiency of our labor. We had to get not two and one-half, but three or more thousand liters of milk from each cow. We organized a 4,000 club. Each milk maid that obtains a milk yield of more than 4,000 kilograms of milk per year per cow becomes a member of the club. We now have about ten such members. They have been awarded privileges both in domestic services and the resolution of other social problems. There are many who are striving to reach that goal. Moreover, a person's right to be a member of the club must be confirmed each year..."

We agreed to continue this discussion on the next day. At eight o'clock in the morning I was returning along the central square of Budo-Koshelev from the cafeteria to the hotel in order to await the start of the work day. The window on the second floor of the raykom building flew open and Nikolay Nikolayevich called out:

"Come on in, and we'll continue our work!" The day of my departure turned out to be sunny. There were about a dozen passengers at the station waiting for the next train. And work was in full swing on all of the nearby tracks. Strong, suntanned fellows, who were probably also students, were unloading construction materials and panels for prefabricated small houses. The destination points on the sides of the cars read: Kareliya and Tyumen, Estonia, and Bryanshchina...

These homes have now been set up for the streets. It is warm and cozy behind the snow-covered windows. Life goes on.

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6289

CSO: 1800/192

NATIONWIDE EFFORT TO BUILD SLAVUTICH LAUDED

Kiev PRAVDA UKRAINY in Russian 1 Jan 87 p 2

[Article by V. Nikipelov: "Slavutich--City of Brotherhood"; first paragraph is source introduction]

[Text] For now, the only place you can see this city is on the drawing board, but the whole country already knows its name. Slavutich is the new settlement for power workers from the Chernobyl AES, and its sunlit city blocks will soon rise among the age-old forests which nestle between the Dnieper and Desna rivers. The city will be built by Ukrainian builders working alongside guest-workers from Russia, Georgia, Azerbaijan, Armenia, Lithuania, Latvia and Estonia.

A new city is springing up in the Chernigov Oblast's Repkinskiy Rayon, near the Neraf railroad station. This is somewhere within 50 km of the Chernobyl AES and within 40 km of Chernigov. Slavutich, where the AES workers and their families will live and take their rest, is designed for 20,000 residents (with a prospective future increase to 30,000). Its master plot plan and detailed layout design were worked up in an unprecedentedly brief period of time--a total of a month and a half.

"How do it's first residents view the city?" is the question concerning his layout for the city which I put to F. I. Borovik, chief architect and director of the first architectural and planning shop for the Kiev Regional Scientific Research Institute for Type-Design and Experimental Planning.

"Most of all," says Borovik, "they see it as a cozy, comfortable and attractive city. And we put as much greenery into it as we could. And not only will it be belted with pine forests interspersed with deciduous trees, but we plan retain as many trees as possible within its four residential complexes. The city planners have tried to breathe new life into the concept of the pedestrian-oriented street by laying them out in each of the microrayons. They have designed the city so that the schools, stores and municipal services facilities will adjoin these streets. In the city center we will have a townspeople's square with a memorial to V. I. Lenin, the Party gorkom headquarters, a movie theater and a Palace of Culture.

"We will put only a few high-rise buildings in the city: a 12-story administrative building, a 9-story hospital and an apartment house for small families. The city's basic structures will be 5-story apartment houses. Beyond them we plan to build comfortable one- and two-story cottages with adjoining personal garden plots.

"The architects, represented by 35 planning organizations from dozens of the country's cities, have placed a great deal of emphasis on the upcoming generation. The plan for the city calls for the construction of 7 pre-school institutions with 280 places each (and equipped with playgrounds and swimming pools), three little school towns with athletic playing fields and swimming pools. A hospital complex is to be built right in the forest. Not far from there, but within the city limits, we'll have polyclinics and a first-aid station. Naturally Slavutich will have all the services and organizations capable of providing the entire complex of services you'd find in any large city."

"Each of the union republics will be using the best of its own designs. Won't this cause a certain eclecticism of styles?"

"We have made every possible effort to keep this from happening," says Fedor Ilich. "The primary task here is that of deciding on a color scheme for the city. We're going to give the city center a snow-white background (using white natural stone, white plaster and white facing tile). All the 5-story buildings, which gravitate towards the center, will be done in tones of gold and yellow, and the suburban area will be distinguished by saturated colors."

"Who from our republic is going to be in charge of building the city?"

"Organizations affiliated with Minstroy [Ministry of Construction], Gosagroprom [State Agro-Industrial Committee], UkSSR Minugleprom [Ministry of the Coal Industry] and Glavkievgorstroy [Main Kiev Municipal Construction Administration]. They will spend two years working shoulder to shoulder with guest workers from other republics.

At present, a shift-workers' settlement is being built for those who will be building the city of Slavutich. Depots for receiving freight shipments from the union republics are also being built.

The entire country has offered the hand of fraternal aid in the construction of this new city. Slavutich will not only be a beautiful city, but will serve as a symbol of the inviolable friendship of the peoples of the USSR.

12659

CSO: 1800/188

CONSTRUCTION OF SLAVUTICH DESCRIBED

Moscow PRAVDA in Russian 14 Jan 87 p 3

[Article by V. Belousov, professor, director, Central Scientific Research Institute of Urban Design; under the rubric "Chernobyl AES Chronicle of Events": "A Town for Power Workers"]

[Text] Life at the Chernobyl AES is gradually becoming settled: the damaged reactor is sealed, and the plant is again supplying the country with much-needed energy. It has been decided to build in two years the new town of Slavutich as a permanent residence for Chernobyl AES workers and their families. The town site is located in the Dnieper forests in the Chernigov area, at the Neref bifurcation of the railroad tracks.

A group of planners, working "two shifts" without a day off for nearly a month, has developed a general town plan and an outline of building placement. The planning at all stages, from the first sketches to the final plans, was constantly discussed at meetings held by a government committee, creative collectives, the Union of Architects and, finally, the Central Urban Design Council of the Gosgrazhdanstroy [State Committee for Civil Construction and Architecture].

Let us have a look at the future.

Arriving in a comfortable car being pulled by a Diesel locomotive after working your shift at the Chernobyl AES, you walk through the spacious and well-lit station building to the wide platform. On your right you see a large shopping center where you can buy everything you need on your way home, while on your left you see a personal service building [Dom byta]. Located next to that are hotels, a market and an automotive service station.

Located alongside the railroad bed are box garages, which also serve as sound insulation, with the garages and residential houses separated by a wooded strip. Buses are waiting for you at the stop, but it is better to walk down the lane passing through the central park nucleus to the main square. Pedestrian paths lead to urban complexes designed by architects of the RSFSR, the Baltic region and Ukraine, and by Georgian, Azerbaijani and Armenian architects.

Proceeding along the street of one of the complexes, you see on one side five-story buildings featuring facade plasticity and decorative styling of entrances,

loggias, and balconies typical of Tbilisi architects, while on the other side there are one- and two-story buildings with their plot of ground. The lower floor houses small stores and facilities designed for social activities and recreation of residents. However, the most popular recreational facility of young people and adults will undoubtedly be the health complexes, where it will be possible to participate in athletic activities in any weather and all year round.

Returning to the central part of the city, let us proceed further on the lane, heading for the main square. On the right we pass a school building equipped with a gymnasium, swimming pool, and athletic facilities. The football field for the school children is not located just there, but 400 meters away at the municipal stadium.

A wooded strip stretches the length of the 500-meter pedestrian lane, between the railroad station platform and main square. A straight and wide walk starts at the main square and leads to a monument erected in honor of the Chernobyl heroes, with an eternal flame burning at the foot of the magnificent sculpture. Also located here is a museum of information on the heroic Chernobyl people, and on the past, the present, and the future of the Chernobyl AES. An architectural ensemble of the square includes the buildings of the municipal Council, Palace of Culture, hotels, and a sports complex complete with swimming pool. This ensemble exists only in model form, awaiting its customer, open competition between architects of the country, and, perhaps, the participation of foreign colleagues.

Pedestrian paths lead from the square to a park for youth with Young Pioneer Palace, game facilities, and swimming pool.

Situated beyond the park and a small wooded area is a hospital equipped with the very latest in medical equipment capable of treating 270 patients at the same time. Also located there are a polyclinic with pharmacy, "first aid" station, and public health station.

You can travel on a circular road past an industrial park consisting of all the facilities needed by the town: a bakery, semimanufactures factory, cold storage plant and ice cream facility, fruit storage building, covered parking for 60 buses and 40 taxis and many other structures. Driving out of the town, in 10 to 15 minutes you pass through a landscaped rest area on the banks of the Dnieper.

Located six kilometers from the town is the village of Nedanchichi. The village has been completely transformed in a short period of time. It, the same as the village of Maleyki, is a base point in the agro-industrial complex system designed to supply Slavutich residents with agricultural products. Situated here on a three-hectare plot are greenhouses, while a half-hectare is host to mushroom cellars. Thriving alongside are 250 beehives; there are ponds specially designed for fish farming.

The general plan for Slavutich determines the basic urbanization strategy and construction tactic for the future town. Realization of the plan is associated

with resolving highly complex problems requiring efficient coordination between the customer -- the USSR Ministry of Atomic Energy; the general contractor -- the USSR Ministry of Power and Electrification; and the general designer -- the Kiev Regional Research and Design Institute for Standardized and Experimental Design of Residential and Public Buildings; and the State Committee for Civil Construction and Architecture at the Gosstroy SSSR [USSR State Committee for Construction Affairs].

This year already will see the erection of half the total of residential buildings, three pre-school institutions, a school, health complex, stores, snack bar, restaurant, bath with swimming pools, hotel, and many other structures filling all the needs of the town dwellers. However, the major feature of the initial period will be construction of roads, erection of well-appointed residential housing for builders, and organization of operations designed to provide the townspeople with drinking water, heat for their homes, hot water, and telephone service. It is necessary to reconstruct the railroad bed, erect cleansing facilities, and accomplish much more, while preserving as much as possible of the greenery, forests and meadows of this wonderful area of the Dnieper region.

13005

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SLAVUTICH ARCHITECTURAL PLANS STUDIED

Moscow STROITELNAYA GAZETA in Russian 21 Jan 87 p 4

[Article by G. Dolzhenko, STROITELNAYA GAZETA correspondent: "The City of Slavutich Will Be!"; first paragraph is source introduction]

[Text]--Kiev--At a joint out-of-town session of Gosgrazhdanstroy [State Committee for Civil Construction and Architecture] and the boards of USSR Minatomenergo [Ministry of Atomic Power] and USSR Minenergo [Ministry of Power and Electrification], the participants went over the progress being made in the planning and construction of Slavutich--the city which is being built for the power engineering workers of Chernobyl.

At the edge of the endless silence and the dense virgin forests a short distance up the Dnieper River from the Kiev Sea, one hears equipment growling today as it uproots trees, shearing out layers of frozen earth. Wherever you look, there are trucks, bulldozers, excavators and cranes. A city is to be laid out here which will bear the proud and beautiful name of Slavutich. It will be an unusual city and will embody the city-planning ideas of the future in its architecture and layout.

For now there are only rough drafts. The architects are still involved in the duel of competition. At present, pre-start operations are still underway at the city site. A total of 34 planning organizations headed by KievZNIIEP [Kiev Regional Scientific Research and Planning Institute of Type Design and Experimental Planning] have been carrying out a number of surveying and draft planning measures and have been drawing up the technical documentation for the erection this year of facilities which will cost an estimated R125 million. This was reported to us by A. Kasilov, director of the institute which brought them all together.

The tradition of allowing the entire world and all the republics to participate in large construction projects started in our country. And so it is that Slavutich will be built using the forces of construction organizations from the Russian Federation, the Ukraine, and the Baltic and Transcaucasus areas. And each of them is presently preparing its own theater of operations for the upcoming spring dash in the rates at which these operations are carried out.

But there were no praises sung at the meeting. Most of the talk was about shortcomings, a great number of which had unfortunately cropped up during the first stage. For example, the basic element in construction is the technical documentation which, as we mentioned earlier, though prepared on time, has still not gotten to those actually doing the construction work. It has taken far too long for the executive institutions, the general contracting planner, the general contractor and construction subcontractor and the client to reach agreements.

The start-up of any construction project is always accompanied by difficulties during the preparatory period: there are the roads and service lines to be laid, and utilities have to be constructed. All these difficulties have been made worse here by severe frosts and snowdrifts. The shortages in electric power, water and construction materials are already being felt, and concrete and mortar deliveries, in particular, have been sluggish. The existing rail spur is simply incapable of receiving tremendous quantities of freight, and is being hastily rebuilt. The ballast and track structure on the Vilcha-Dnieper leg is being replaced. But we're running out of time. Moreover, up to now it has not been clear who will design the trestles and the traction substations for electrification of the line between Slavutich and the AES.

We're having similar problems with the highways. It's even difficult for the panelling trucks to travel along the roads in winter, and it's worse during the season of bad roads. But road-building operations are also behind schedule. The placement of people remains a sore issue. More of them arrive with every day. An increase of up to 30,000 construction workers is anticipated during the peak period. But there are still 1,500 bunks on the ships standing by at the Yakor River Port, and the Lesnoy workers' housing estate, now under construction, can handle 3,000 people. We've named a multitude of problems, but that's the way it is on any major construction job. But there have been problems which have come to light because of a lack of a business-like approach to the business at hand. Some comrades talk about it this way: you can't make an omelette without breaking eggs, speaking of petty details. And when laying rights-of-way and clearing building sites some trees get burned. First here, and then there you can see our property blazing up in tremendous bonfires. The wastefulness is also obvious in the departmental railroad sidings. They are crammed with materials. This has even caused some railcars to derail.

At the joint session held by Gosgrazhdanstroy and the boards of two ministries, the demand was constantly reiterated that national property be handled with care and economy, that every kopeck be counted, whether for material valuables, architectural or planning decisions or transport expenditures. The primary parties who ought to bear this in mind are the directors of the recently-organized Slavutichatomenergostroy [Slavutich Nuclear Power Plant Construction] Trust.

There is no doubt that the Party ought to have more of an influence on affairs at the construction site. The Pripjat City Party Committee recently set up a group which will coordinate the party's work with the groups of construction workers arriving in Slavutich. (The republics sending the groups should see to it that they have well-organized party organizations by the time they

leave). The gorispolkom is sending its own group as well. Soviet workers should be thinking right now about how they will distribute the apartments in the multi-storeyed apartment houses and cottages, so that the principle of social equality is strictly observed. Some thought ought also to be given to setting up a private office for the architect in the city-to-be.

The construction workers are faced with a great many tasks. They have two years to make 300,000 square m of housing, complete with social, cultural and medical facilities, ready for 20,000 persons.

The recent demand that additional facilities costing a total of R60 million be erected has increased the stress at this project. The state has begun increasing outlays for labor stimulation. A 1.25 wage coefficient has been introduced for workers brought in from out-of-town. According to the work they do, 75 percent of their average wages have been retained for them. "But what we need from the collectives today," summed up I. Ponomarev in his remarks at the joint meeting, "is maximum cooperation, initiative and a business-like attitude."

Socialist competition between the union republic workers' groups and the planners, under the recently devised motto "From An Excellent Design to Excellent Quality in Building the City", along with the introduction of the brigade contract, should help a lot. Right now we need to shift the center of gravity of all organizational and economic work from the oblast and republican centers to Slavutich. The speed of the construction, and in the final analysis the amount of time it will take to bring about normal living and working conditions for Chernobyl's power engineers, depend in large part on this.

12659

CSO: 1800/188

HOUSING

BRIEFS

CHERNOBYL WINTER SERVICE ARRANGEMENTS--The river ice breaker "Portovyy-11", which is to provide winter service to the river fleet in the Chernobyl AES area, has travelled from Rostov-na-Donu across the Sea of Azov and Black Sea before the end of the navigation season, accompanied by the seagoing tug "Nepristupnyy". "In the navigation season," said V. Chashchin, deputy chief, special piloting expedition, RSFSR Ministry of the River Fleet, "we have sent to Chernobyl from the Volga and Kama via the Southern Sea Route to Kherson and then up the Dnieper a total of 11 passenger vessels refurbished as floating hotels to house personnel who are dealing with the aftermath of the accident, along with specialized auxiliary craft -- a floating store, a water barge and a cleansing facility. [By V. Mertsalov] [Text] [Moscow PRAVDA 6 Dec 86 p 6] 13005

ECOLOGICAL ACTIVITY OUTLINED--The first phase of an ecological trip has been completed in the Nikolayev area. The activity is operating under the motto "How Are You, South Bug?". The South Bug is the third largest river in the Ukraine. It originates as a small stream in Khmel'nitchina and flows through several republic oblasts. The purpose of the activity is to study ecology problems related to the major water artery of the area. Trip participants spent some time on cleansing facilities operated by enterprises located at Nikolayev, Pervomaysk, Voznesensk, and the South Ukrainian AES, and they took part in unannounced inspections with the purpose of determining who the offenders may be. They came across cases of contamination of the river, plowing of the river banks, and negligent attitudes toward mineral fertilizer storage. Their findings were turned over to the appropriate organizations for corrective measures. [By A. Kolesnik] [Text] [Kiev RABOCHAYA GAZETA 27 Dec 86 p 2] 13005

CSO: 1800/183

CIVIL DEFENSE OPERATIONS CONDUCTED IN DANGER ZONE

Moscow VOYENNIYE ZNANIYA in Russian No 1, Jan 87 pp 16-17

[Article by Major General D. Timerkhanov: "In the Danger Zone"]

[Text] Autumn of last year. The last few kilometers before entering the 30-kilometer zone around the Chernobyl AES... We constantly pass trucks and tractor trailers hauling construction materials, foodstuffs, forage, and other freight.

Government and military vehicle inspection, militia, and radiation monitoring stations have been set up on the zone's border. There is a special processing station (PuSO) that is made up of persons in rubberized suits, gloves, and respirators. These are soldiers of the a civil defense subunit [podrazdeleniye]. They are decontaminating all machinery coming from the zone with strong streams of water containing a special solution. Nearby, the drivers and passengers decontaminate their outer clothing and are washing themselves under the supervision of specialists. After passing through the PuSO, we proceed further.

We become acquainted with the soldiers standing watch. The radiation monitor spotters and chemist-spotters deserve praise. They are the first to arrive at the radioactive contaminated areas and immediately get down to work. And there is still plenty to do. Vast sections of the region must be scanned with instruments. They must also determine the limits and degree of contamination, plot all essential data on a map and report their findings to their commander.

Today this assignment is being carried out by a group led by sergeant I. Kolendo. This is not the first time that he and privates Yu. Padalka, P. Moguchev, and G. Dorodnyy have been in this kind of operation, so they go about their work with precision, confidence, and a sense of responsibility.

The level of radiation was variable throughout the entire sector. The radiation level was above normal on the leaves of trees, roofs of old structures, in the thicket, and in the grass that was almost waist high, whereas it was slightly below normal on forest paths and the lake shores. The spotters had to pass through quite a few kilometers in their protective outfits. And not simply pass through. They collected samples of the soil and water, and made hundreds of measurements with their radiation counters as they

thoroughly examined the contamination zone. And none of the soldiers slackened their pace for even a minute. Each person understood that the assignment had to be carried out as quickly and efficiently as possible.

The next stage of the operation was to find water for decontaminating the machinery. Just a few kilometers away, the spotters found a suitable reservoir. The amount of water in it was sufficient for decontamination and the area was very convenient for bringing in the machinery.

"Well done!" was the way the subunit's commander evaluated the work of the spotters. "They did an excellent job of handling their assignment, in spite of the difficult conditions that far exceeded the requirements of normal military duty."

Soon thereafter the chemical decontamination specialists arrived at the zone's border. Using the data obtained by the spotters, they started to treat the area with the aid of special equipment, and then proceeded to decontaminate vehicles coming out of the zone. The automatic dispensing station (ARS) crew composed of driver private A. Sevastyanov, and privates S. Kovalev and I. Bratusin, operated calmly without any fuss. After decontaminating one vehicle, they immediately proceeded to the next one. One had the feeling that every minute counted. When the driver private A. Sevastyanov left to fill the ARS with water and a special solution, privates S. Kovalev and I. Bratusin shoveled a ditch to enable the used up solution to flow into a special settling tank.

The other crews were also working at full capacity. For example, First Sergeant A. Tsyganskiy, Private 1st Class V. Yeremenko, and Private A. Shcherbina completed the thorough decontamination of the wooded sector within a short period of time.

And once again we proceed along the area from which residents have been evacuated for safety reasons. But life here has not come to a halt. Every morning busses bring the next duty shifts of cattle breeders to the farms. They maintain order in the buildings as they get ready to accept the removed cattle.

We arrive at the settlement. Here we see brightly colored two-story contemporary houses, rows of birch and spruce trees. People were living comfortably here, although the accident forced them to abandon their residential areas for awhile. Now the settlement, like its neighboring villages, is going through a planned, step-by-step procedure of removing the radiation. The decontamination work is also being carried out by the civil defense soldiers.

Did you happen to see how they are washing the houses? At first this seemed to be a very unusual way of doing things to platoon commander Lieutenant A. Shevchenko and his men. But it turned out that their equipment was perfectly suited for decontamination. The trucks swing around on the square and get into place in front of the white cottages. Fountains of water begin to spurt up high against a cloudless sky and then rain down in cascades on the roofs,

washing the radioactive dust down to the very ground. After the treatment is completed, the crews change positions.

Squad leader Komsomol Sergeant V. Polozenko has been here since the very first days of the accident.

"We know that the better we do our assigned task, the sooner will the people be able to return to their homes," he said. "I can well remember that first day when after having completed a long march beyond the standard distances, we set up a special treatment station and started to decontaminate the busses carrying people being evacuated. We worked without sleep or rest, but we finished the job in fine fashion."

Now the most difficult days are behind us. The life of the soldier has now returned to its normal routine. The practical procedures for decontamination are of necessity combined with theoretical classes on nuclear physics and a study of safety measures during work in the contaminated zone. This is very important since the work being undertaken by the soldiers is exploratory, covers a wide range of activities, and must be completed within a short period of time. All of this requires a creative resolution of problems and the testing and efficient introduction of all kinds of new equipment that can help to achieve our goals quickly and with a high degree of reliability.

After completing their daily work plan, the soldiers can also take time out to rest. They listen to lectures about national and world events in the field recreation room. In the evening they watch television, and new films are regularly shown in the open skies "cinema auditorium." There is also time to sing with friends to the accompaniment of an accordion and guitar, or to read the latest newspapers.

The soldiers are working shoulder to shoulder with representatives of various departments and with the local populace in the 30-kilometer zone. This kind of close bond with the people has been and remains an important factor of our strength. Those working at Chernobyl plainly see the civil defense soldiers as reliable protectors against calamity, and as true helpers. They can see their selflessness, courage, purity of heart and honesty, efficient organization, and unity. They see their important and concrete contribution to the national cause of controlling the consequences of the accident at the AES.

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MILITARY PREPARES FOR SPRING FLOODS

Kiev PRAVDA UKRAINY in Russian 8 Mar 87 p 4

[Article by LENINSKOYE ZNAMYA correspondent Major V. Miroshnichenko: "In Anticipation of the Floods. Chernobyl: Chronicle of Events"; first two paragraphs are PRAVDA UKRAINY introduction]

[Text] I am standing at the edge of a very tall precipice with officer S. Pastushik. Below us is the narrow band of the river which is almost closed off by a dike. Scurrying busily about the river are bright yellow bulldozers that seem quite tiny from this height. Far beyond the snow-covered fields one can see the dark blue surface of an enormous cooling pond. Rising behind the pond in a pale morning puff of smoke are the buildings and pipelines of the Chernobyl AES.

"Today, our most important object today is the southern dike," said S. Pastushik.

Work began here, as did all anti-flood measures, incidentally, in the deep winter when heavy snowfalls were the cause of alarm to both meteorologists and hydrologists. According to their forecasts, based on many years of observations, the spring floods would also be very intensive.

The first task of the flood commission organized at the Kiev oblispolkom was to coordinate the activity of a dozen organizations such as the Kiev Oblast Water Management Administration of the Hidroproyekt Institute, the Construction Trust of the Ministry of Power and Electrification, and Yuzhatomenergostroy [Southern State Atomic Energy Construction Administration]. Also included in this operation were military subunits (podrazdeleniya) participating in the cleanup operations at the Chernobyl AES. A plan of specific measures was drawn up. Thus, groups were organized for the protection of hydraulic engineering facilities, a large equipment pool was prepared, vast reserves of quarystone, gravel, and sand were gathered, and an ice breaker and detonator crews are being prepared in case of an ice jam on the Pripyat River. In addition, continuous air and land surveillance of the flood situation will be maintained. But the main task is the preparation of previously built hydraulic engineering facilities or the construction of new

ones. Our main efforts are now being focused on the construction of a southern dike, since it is here that the main "impact" of the flood is expected...

And so we go down to the river. A powerful bulldozer that can move 1,000 cubic meters of earth in a single shift forced open a low angle drain canyon in a 30-meter escarpment. This work was accomplished in record time by bulldozer operator I. Mikhalchuk and comrades of Yuzhatomenergostroy.

The water released from the ice accelerates its run in a washout that has already reached a width of six to eight meters. And after a total of only 10 days, Major A. Titarenko and a representative of the administration for the mechanization of construction projects, with a dike construction draft for this area in their hands, outlined the operations plan. On that very same day powerful bulldozer driven by Privates S. Prazhennyy, V. Sadrevskiy and their comrades arrived at the construction site. They started to level off the bed of the dike...

At the same time excavator operators V. Ivannikov, S. Miknyavichus, and others hauled rock, gravel, and sand in dump trucks at one of the railroad stations. When the bed of the dike was ready, operators Ensign V. Sokolov, Sergeant E. Rozenberg, and other soldiers started to unload the material directly onto the dike and in the closure channel. The work in this sector was ahead of schedule thanks to the precise and skillful organization provided by subunit commanders Captains V. Sutulin, I. Marchuk, Sr. Lieutenant A. Linkyavichus, and Jr. Lieutenant I. Plyantauskas...

"The latest forecasts of the meteorologists and hydraulic engineers are promising," said officer N. Zaytsev. "But this will not slacken the work of those working on preparations for the spring floods. Nature can come up with any kind of surprise. We must be prepared for the most extreme situations. That is our duty..."

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PLANT OPERATIONS

NORMAL OPERATIONS RESUMING AT CHERNOBYL

Review of Current Operations at Plant

Kiev PRAVDA UKRAINY in Russian 19 May 87 p 4

[Article by Correspondent A. Sokol: "Routine Work Days: Chernobyl Today"; first paragraph is PRAVDA UKRAINY introduction]

[Text] Kiev Oblast--They are still wearing those brown overalls at the nuclear power plant. But neckties and collars can be seen peeking out from beneath many protective jackets. Traffic has settled down to a peaceful rhythm, and no more oversized trucks and unusual cargoes can be seen on the roads. And most importantly, there is no more anxiety in the air.

Under Computer Control

The damaged unit has long been buried, but they are still working here around the clock. The reactor's fuel must be kept under careful observation.

"We are working in safety, behind a dividing wall," said shift chief V. Stolyarevskiy.

This wall divides the once unified giant complex from its basement levels to its roofs, dependably separating Unit Three from the damaged reactor. We made our way over the different levels and shops of Unit Three. In it, reconstruction work was proceeding at full steam.

"This is our information and diagnostic complex," said the shift chief as he entered a room packed with computer equipment.

Duty operator Igor Panchenko explained that the computer was monitoring the "health" of the damaged reactor. Information on the neutron flux, for example, comes in every second. The possibility of a chain reaction is excluded, but nonetheless the nuclear safety system is alert. Just press a button and boron solution would immediately splash into the destroyed reactor.

The thermal situation is under surveillance. In February the maximum temperature of internal structures attained 1120, while today it is 98. Numbers flashing on the display communicated the level of gamma-radiation.

Measurements were being taken in various places, even in "inaccessible" ones. Specialists are certain that there are no grounds for concern.

We looked over the ventilation complex. The floor was covered with a myriad of little cells. These were filters capable of trapping radioactive dirt. There was a similar room on the next floor up. The pipes of the two long rows of ventilation units on this floor led directly into the ruins. In an hours the ventilation systems could filter a thousand cubic meters of contaminated air. But they were not working--there was nothing to ventilate. The machines are turned on only for testing purposes.

At the information and diagnostic complex we met associates of the Nuclear Research Institute of the Ukrainian SSR Academy of Sciences--Candidate of Physicomathematical Sciences A. Borzakovskiy and senior engineer V. Sopronyuk. Scientists of the Institute of Atomic Energy imeni I. V. Kurchatov and other institutions are working here as well.

Over Seven Billion...

The conditions under which work is proceeding at the nuclear power plant are still extreme in many ways. Operational meetings are convened three times a day. The first was held in the morning. It was conducted by chief engineer G. Yaroslavtsev. The discussion was brief--reports, questions and answers, short remarks, instructions.

"Units One and Two," Gennadiy Fedorovich told me, "have been raised to their former output capacities. They have already produced over 7 billion kilowatt-hours of electric energy. Unit Two is now undergoing overhaul. Just ordinary planned work. It should be started up in late May."

L. Vodolazhko's shift accepted the day watch. The corridor leading to this work station went on forever. I was here soon after the accident. Deviating from the marked path meant exposing oneself to extreme danger. Now these signs were hidden behind a freshly gilt metal skin. There was no cause for concern.

The situation displayed by the central control panel was routine. Vodolazhko was a man of few words. Everything was normal, the overhaul assignments had been completed. From time to time he would answer the telephone.

"How many in your shift were working at the station at the moment of the accident" I asked him.

"Many," Leonid Konstantinovich said. "There are some in every shop: Operators Nikolay Prelovskiy, Nikolay Filatenko, Vasiliy Markin, Valentin Vishnyak and

others in the reactor room, mechanics Yuriy Semenyuk and Valeriy Zabrovskiy in the turbine room, electrician Aleksandr Varaksin...."

He went on to name other names--chemist-operators Nikolay Tenishev and Dmitriy Naroditskiy, duty electricians Vladimir Bigunenko and Vladimir Fesenko. Senior turbine mechanic Anatoliy Bobrovskiy was at his work station both at the time of the disaster and the first time the power plant was started up again after the accident.

Such people make up over 90 percent of the shift. Workers from other plants are also working here temporarily. Vodolazhko's counterpart in the other shift was A. Bokarev from the Leningrad AES. As a supervisor he began work a day early: He worked himself into the routine as a back-up. Such is the procedure.

Unit Three Next in Line

The fact that Unit Three is the last to be put back into operation is natural. It was working side by side with the damaged unit. The dividing wall was erected between them a year ago, but quite a bit of "dirt" settled on Unit Three.

Gas masks still have to be worn in the unit's rooms--decontamination is still underway. The work is mainly on the roof. Soft roofing is being replaced down to metal.

It is now a rare thing to hear commands from the decontamination unit's radio center to workers on the roof to take to their shelters or to check their dosimeters. Music, birthday greetings and reports of successful assignment completions are now the more frequent traffic.

Over 80 percent of the rooms have already been decontaminated. The repairmen come in next. Their attention is focused on the reactor. Besides repairing it, they are raising its reliability.

"This is a time of intense work," said power plant director M. Umanets. "We hope to prepare Unit Three and start it up by fall."

The power engineers work watches. They work 15 days, during which time they live in Zelenyy Mys, and then they get 15 days off in Kiev. Then once again back to the power plant. There are great hopes for Slavutich. Housewarmings are already being planned in the new city this year.

Kiev, Kiev Oblast Toured by Journalists--Part I

Kiev PRAVDA UKRAINY in Russian 11 Jun 87 p 3

[Article by M. Derimov: "Two Views on Chernobyl"; first paragraph is PRAVDA UKRAINY introduction]

[Text] Kiev and Kiev Oblast were visited in the first third of June by 40 representatives of foreign mass media accredited in Moscow. They visited Chernobyl and the Chernobyl AES, the city of Pripyat, the working settlement of Zelenyy Mys and Zdvizhevka, one of the new towns inhabited by people who had been evacuated from the 30-kilometer zone, and they met with a number of major specialists working in different facets of the clean-up effort following the Chernobyl accident. A special correspondent of PRAVDA UKRAINY traveled together with the foreign journalists.

1. An Encounter with Courage: "Of Course We Knew It Was Dangerous...." Experts Present Facts and Conclusions. The Photograph in the GOTEBORGS POSTEN: Zdvizhevka Residents Angered. The MAINITI Correspondent's Mistake.

We were looking at an exhibition in the oblast fire protection administration describing the different stages in the struggle with the Chernobyl disaster. These exhibits bring out deep emotions. The photographs and documents attest to the heroism of the firemen, who were the first to do battle with atomic energy out of control on that tragic night of 26 April 1986; to the colossal work of bridling the mutinous reactor and decontaminating the terrain, done by thousands of courageous people; to the enormous assistance of the state in evacuating the population from the danger zone; to the selfless work of talented scientists who solved numerous highly complex problems in extremely short time; to the entire country's participation in the effort to clean up after the accident; to the solidarity displayed by the international public in our hour of need.

Among the numerous questions which foreign journalists asked later on of Hero of the Soviet Union Lieutenant Colonel L. P. Telyatnikov and former Pripyat firemen's Komsomol organizer Captain V. F. Melnikov, there was one that caught my attention:

"Were you aware at that time of the mortal danger to which you were exposing yourselves?"

This was a question with hidden meaning: Might their actions have been the result of simple ignorance of the danger, rather than a supreme manifestation of courage?

Telyatnikov replied with his typical composure:

"The people knew what danger they were exposing themselves to, but they worked selflessly. This is precisely why we were able to put the extreme situation under control."

Melnikov's reply was more emotional:

"Of course we knew of the danger! Prior to the accident we often thought about where the heroes of the Great Patriotic War got the spiritual strength to block the firing ports of enemy pillboxes with their chests, to ram enemy warplanes in the air, to endure torture behind Gestapo walls.... And now the experience of Chernobyl demonstrates that our generation is also capable of acting just as courageously in an hour of danger."

The next phase in the visit of the foreign journalists was a meeting with Kiev Oblast executive committee deputy chairman K. T. Fursov and competent experts--O. A. Pyatak, deputy director of the All-Union Scientific Center for Radiation Medicine of the USSR Academy of Medical Sciences; Professor V. G. Bebesnko, director of the Institute of Clinical Radiology; O. V. Serebryakov, chief of the Ukrainian Center for Radiation Control, and other specialists. They presented the facts, cited carefully checked figures, and offered substantial grounds in particular for the conclusion that there was no danger of genetic deviations in the future (most of these data have already been presented on several occasions in our press).

Among other things, I was able to jot down the following exchange in my notebook.

O. V. Serebryakov: "We regularly analyze the water for its total isotope content; we have taken hundreds of samples, and not a single sample has had a concentration that exceeds the permissible international norms."

M. Dederiks, correspondent of the West German journal STERN: "What were the highest levels of water contamination?"

O. V. Serebryakov: "I repeat there was not a single sample that exceeded...."

Mario Rene Dederiks had already been in Kiev in August of the previous year, after which he published a report in STERN in which he cited clearly inflated "data" on contamination of water, sediments and foodstuffs gleaned from doubtful sources, and frightened the West German reader with terrifying predictions. It was in that time that Western propaganda's false myth about "corpses on the streets of Kiev" and about "thousands killed as a result of the Chernobyl catastrophe" collapsed once and forever, and Mr Dederiks' publication could be assessed as nothing other than an attempt to galvanize this myth, on a different foundation so to speak. When he once again came to Kiev a couple of months ago and visited the editor's office at PRAVDA UKRAINY, we turned his attention to the misleading nature of the "facts" he presented.

And now Mario Dederiks was once again in Kiev, and I asked him whether or not he was satisfied with the information given by the experts.

"No, I'm not satisfied. There is little that's new...."

That is, nothing that would support the fantasies published in STERN.

Mirko Boich, correspondent for the Yugoslav journal ILUSTROVANA POLITIKA, gave a different answer to this question:

"We received trustworthy information from competent individuals. It is fully in keeping with what we saw yesterday in Chernobyl" (this was one of the journalists in the group that visited the nuclear power plant vicinity the day before.--M. D.).

The village of Zdvizhevka, Borodyanskiy Rayon, is the place to which residents of the village of Zalesye, Chernobylskiy Rayon, were evacuated in early May of last year, and in which 250 quality homes were built for them in short order, even before the onset of autumn. Our bus stopped beside a children's playground. There were many children there. The correspondents pulled out their cameras to take pictures.

The beauty and the functional perfection of the children's play town were astounding. There was an inscription on one of its graceful structures: "To the children from architecture students of the Kiev Construction Engineering Institute." There are many such unique "business cards" on the houses of Zdvizhevka: After all, they were built by collectives from different enterprises and institutions of Kiev. "Many of our people wept when they accepted this gift--this fabulous new village--from the citizens of Kiev," explained village soviet chairman A. G. Chernenko to the correspondents.

The participants of the journalists' "assault landing" scattered themselves along the street, asking passers-by about their living routine. No matter whom they asked, all were pleased with their housing and with the sizable compensation they received from the state.

Gao Fen from China's GUANGMING RIBAO, William Eaton from America's LOS ANGELES TIMES and I asked permission to enter one of the houses. It was the home of pensioners Olga Antonovna and Kuzma Kuzmich Ilchenko. They also were pleased with their housing and their compensation.

"And the locals received us very well," said Olga Antonovna. "They are like relatives to us now."

"Will you remain here after it becomes possible to return to your own village?"

"No, we'll go back home."

"Why?"

"We long for home. Our parents are buried there, and that's where we have to be. It's always better at home, after all...."

"So you're an American," Kuzma Kuzmich turned to Mr Eaton. "I remember the Americans, I met them in Berlin when we beat Hitler. They were good boys. Do tell them that we must live in peace. We can't let war happen."

The guests wanted to take pictures of the homeowners, but they were refused.

"Swedish journalists visited us in winter," Kuzma Kuzmich explained. "They took pictures of one of our neighbors. He was wearing a good quality suit. But when we received a copy of the newspaper and looked at the picture, it was as if he had been wearing rags. It wasn't a photo, it was a cartoon. No, please don't take any pictures."

Coming across the chairman of the village soviet in the street, I asked him about that strange incident with the picture in the Swedish newspaper. Anatoliy Grigoryevich silently pulled a copy of GOTEBORGS POSTEN from his pocket and showed it to me. There was a large picture of Zdvizhevka on the front page. But the way it was taken! From the backyards. The foreground was dominated by outhouses, and behind them the homes looked crowded together and bleak.

I asked the STERN correspondent, who happened to be standing next to me, what his assessment was of such "work" by his associates from GOTEBORGS POSTEN.

"I don't see anything bad in that," said Mario Dederiks. "The fact is that there was no other way to take a panorama of the population center."

"But our people were insulted," Anatoliy Grigoryevich objected. "They were angered by such a portrayal of their village."

As I recall, our photographer-correspondent P. Prikhodko had taken many pictures of Zdvizhevka. And of course he did not take the pictures from the outhouses, and his panoramic shots were not bad. By the way, one of them had been given to Mr Dederiks at his request during a visit to our editor's office. Half an hour before this conversation he told me that the photograph was "inappropriate" for his magazine. Was this perhaps because it did not put the village in a bad light, as the picture in GOTEBORGS POSTEN obviously did?

While riding from Borodyanskiy Rayon to Kiev I talked with Aymo Ruusunen from Finland's KANSAN UUTISET and Masasi Egava from Japan's MAINITI. Both had visited Chernobyl the day before, and today they were returning to Moscow.

A. Ruusunen: "I am satisfied with this trip. I saw with my own eyes how much has been done and is being done to get life in the vicinity of Chernobyl back to normal. I was especially impressed by the concern of the state for the people evacuated from the 30-kilometer zone. Its humanitarianism manifested itself clearly in this hour of need. There is no comparison with the capitalist world, where people who suffer from natural disasters or major industrial accidents lose everything, and run across the inhuman indifference of the powers that be."

M. Egava: "In Chernobyl and in other places I saw the impressive results of a tremendous effort. You have surmounted the disaster. I saw in the village how much concern is being shown for the evacuees. This is good. But there is a negative side too. After all, the people who ended up in this village did not have a choice as to where to go."

I explained to Mr Egava that he was mistaken concerning the "absence of free choice," that he should have asked the people in Zdvizhevka about this. They would have told him all of the possibilities they had for going to other places, naturally without losing their right to assistance and compensation. I explained to him that they simply preferred to live together, in their own collective.

Mr Egava nodded respectfully, but he smiled in disbelief. What can be said? Our associates from the bourgeois press stubbornly hang on to the usual anti-Soviet stereotypes, to our supposed "deficiencies" (not real ones, of course!). They retain them as axioms not requiring proof, or they dig deep looking for bad things, and even dare to juggle the facts in an attempt to find "support" for their fabricated propagandistic stereotype.

The photograph from GOTEBORGS POSTEN and Mr Egava's misconceptions came to my mind several times on the following day as I rode with my foreign associates to Chernobyl.

Kiev, Kiev Oblast Toured by Journalists--Part II

Kiev PRAVDA UKRAINY in Russian 12 Jun 87 p 3

[Article by M. Derimov; Conclusion. See the 11 June issue for the beginning: "Two Views on Chernobyl"]

[Text] 2. "Don't Be Shy, Folks, You Don't Need to Hide the Dosimeters.... "Pripyat--Our Grief. At the Peaceful Village Cemetery in Zalesye. "Lethal" Sediments and the Dniepr Pike. Discussions and Thoughts on the Road from Zelenyy Mys to Kiev

The bus bearing the foreign correspondents stopped on Bogdan Khmelnytskyi Street in Chernobyl. It is immediately evident that the situation has changed for the better here (in comparison with June of last year for example). No one is wearing gas masks--they are not needed. The city is looking better: The lawns are being cut, and girls in overalls are manicuring the flower beds. They are still working on a rotation basis in Chernobyl, but there are noticeably more people on the streets.

"Tell me, please, what is this invalid doing here?" Mario Dederiks asked me reproachfully.

Sure enough, a person with no legs was moving on crutches along Bogdan Khmelnytskyi Street a short distance away from us. While I was wondering why the appearance of this individual interested the West German journalist so (could he be thinking that they evacuated the healthy but abandoned the invalid? Or that the "heartless Soviet technocrats are even forcing invalids to work in Chernobyl"?), the person turned into one of the side streets.

It was not until I was working on these notes that I recalled that the STERN correspondent's pathetic question had remained unanswered. I telephoned Chernobyl--the department of information and international ties of the

Kombinat Industrial Association--and asked my rather unusual question: Is a certain person without legs working in the city? They answered: "There is no such invalid among the people working in Chernobyl. You obviously saw one of the evacuated local residents, who have been given permission to come back and pick up some family heirlooms."

But let us return to our trip.

"I can tell you people that we have already achieved impressive results in the effort to decontaminate areas of the 30-kilometer zone that were subjected to radioactive contamination," said A. P. Kovalenko, chief of the department of information and international ties mentioned above. These words were persuasively confirmed by what the foreign correspondents saw with their own eyes both in Chernobyl and in direct proximity to the nuclear power plant.

The journalists were received by M. P. Umanets, director of the nuclear power plant.

"Don't be shy, folks," he said, "you don't need to hide the dosimeters. Take them out and see what the radioactivity level is around here. It should be hundredths of a milliroentgen per hour. And in the environs of the plant the level is millions of times lower than a year ago."

Finnish television correspondent Yurye Lyansipuro pulled out his dosimeter. The instrument confirmed what was said about the hundredths of a milliroentgen.

Mikhail Panteleyevich informed us that the first two units of the plant were working normally, under totally safe conditions, and then he recalled the tragic events of 26 April of last year, and the responsibility for the incident borne by the former director and chief engineer of the plant.

"I know for certain," he stressed, "that even at that time the personnel did have all of the technical resources they needed to keep the accident from happening. It was only a series of the grossest errors and violations of the operating instructions that led to the disaster."

Then we visited the control console of Power Production Unit One. Then the machine room. Then we took the bus to the enormous structure that was the shelter covering the damaged fourth reactor, and armed with microphones, the Austrian and Finnish television correspondents explained to their audience where they were, and the cameramen tried to take the correspondents with the bulk of the "sarcophagus" towering behind their shoulders. And finally we arrived in Pripyat.

Around 50,000 people lived in this city. On that anxious day of 27 April of last year, when the radioactivity began to grow, they were all evacuated within 2 hours. And since then these nine- and 16-story houses have been uninhabited. Mario Dederiks from STERN, William Eaton from the LOS ANGELES TIMES, and the television cameramen took pictures. First from far away. Then from an increasingly closer distance. The lenses focused closer and closer on

a balcony on which a pair of shorts had been fluttering in the wind since the day of the evacuation. What a piquant detail, they must have thought!

Pripyat is our grief. Many thoughts come to mind as you look at its uninhabited housing. About irresponsibility and unconscientiousness at work, about violations of labor and production discipline, which sometimes lead to tragic consequences. About the truly heroic efforts that must then be undertaken to destroy the toxic fruits of someone's carelessness, laxity and slovenliness. Another thought that keeps coming back is what the cities of our planet might become if we fail to protect it from the threat of nuclear war.

I could see that some of my foreign associates would have wanted to document a sensational image of the "dead city." But uninhabited houses are not the entire truth about Pripyat. People are working here, and an intense struggle to return to normal life is proceeding here. Take for example the large areas covered by greenhouses. Vegetables and berries are being grown in them.

There is a radiobiological laboratory here. Its colleagues are cultivating varieties that do not accumulate nuclides.

We stopped at a square in which the cars and motorcycles belong to residents of Pripyat and neighboring villages were parked (this was done so that transportation resources would not carry radioactive contaminants outside the 30-kilometer zone). Next to the square is an area of forest that has not yet been decontaminated. It is surrounded by wire fencing. One would think that the fencing was magnetized because of the way it attracted some of the camera lenses.

The next stop was in Zalesye: The foreign correspondents wanted to see the village that had previously been inhabited by people who were now living in Zdvizhevka, Borodyanskiy Rayon. The peacefulness of the modest village cemetery was disturbed by the fussing of the television cameramen and photographers.

When our bus reached the main street of the workers' settlement of Zelenyy Mys, we witnessed the following ordinary scene: One of the residents of the settlement was walking along, whistling, carrying a huge gaping pike in a cellophane bag. The fishing was good that day on the Dniepr. As I looked at Mr Dederiks he was looking at the pike with an indifferent gaze, displaying no desire to talk with the lucky fisherman. And yet the pike was not just a fish: It was material evidence. Of the fact that Mr Dederiks was wrong last year when he compared, in STERN, the sediments of the Dniepr basin with radioactive wastes that kill all living things.

Zelenyy Mys has been described substantially in our press, and so I will not go into what the foreign colleagues saw there.

At this point we parted with Aleksandr Pavlovich Kovalenko, who escorted us during our visit through the 30-kilometer zone. His parting words to Mr Eaton were these:

"Last spring we agreed to receive the members of a certain American congressional committee, on the condition that we would also be given a possibility to visit the American nuclear power plant at Three Mile Island, where a similar accident occurred. We are naturally interested in the clean-up experience there. But we have never received such an invitation. Later on one of your well known journalists, Styuart Luri, visited us. He also promised to get in touch with the owner of the Three Mile Island Nuclear Power Plant, a friend of his. But there's been no news from him either."

"But that power plant is a private enterprise," I said. "Its owner can do anything he wants: He'll let you through the entrance if he cares to, and he won't if he doesn't."

"I'll remind Styuart Luri about his promise," William Eaton promised in turn.

On the road from Zelenyy Mys to Kiev I tried to summarize my impressions. Yes, we did see that misfortune had occurred in this beautiful corner of the Polesye. But we also saw the heroism with which our people fought and continue to fight against this misfortune, and the powerful forces that our government called in to clean things up. The pictures taken on this day could of course be put together to produce an essentially misleading video journal: a "dead city" in which the only reminder of human presence is a sorry rag on a balcony; a fence beyond which extends an uninviting forest concealing who knows what; gloomy monuments in the cemetery. Oh yes, and a soldier walking along the road--here it is, the "Soviet threat"!

I shared my thoughts with Yurye Lyansipuro.

"No, I have no intention of misleading anyone!" the Finnish television journalist exclaimed. "I took pictures of the cemetery to show the graves which the people of Zdvizhevka are tied to. Things are going well for them there, but they want to return home. This is a great feeling. Let me assure you that I will certainly show the great work that is racing on at Chernobyl, I will show that life conquers! We Finns must also do some work to make Northern Europe a nuclear-free zone. The entire planet must become such a zone, free of nuclear weapons."

"We Greeks favor a nuclear-free zone at home in the Balkans," Mikhalis Menikos, a correspondent from the newspaper PROTI, joined the conversation. "But there are major obstacles at the moment in this matter: The USA is exerting unprecedented pressure on the Greek government--it is very reluctant to lose its Pentagon bases. But we demand removal of this potential source of radioactive contamination or, more precisely, universal annihilation, from our land."

I spoke with William Eaton.

"Much has been done in Chernobyl," said the LOS ANGELES TIMES correspondent. "I thought things would be worse. It's safe there now. Certain lessons have been learned from the mistakes. It's a pity that we received so little information about Chernobyl."

"I can't agree with you on that point. Recall for example how many press conferences on the situation with the Chernobyl Nuclear Power Plant were set up by the Soviet side. You, I'm sure, attended these press conferences."

"Yes, but this was the first time I've been able to visit Chernobyl."

"I think that not a single Soviet journalist has yet been able to visit the Three Mile Island Nuclear Power Plant, discussed earlier today, even though the accident occurred a goodly number of years ago. And as you heard, even specialists from Chernobyl have still not had the possibility. But you and I have been able to visit Chernobyl, the power plant, and Pripyat. Did you find this trip to be professionally satisfactory?"

"Of course. It made a very strong impression. The city of Pripyat in particular. When in that city, one can't help thinking about the world's future."

"If a nuclear war starts, the world's future will be unimaginably terrible. Don't you think that it's time to finally make the first real step in the matter of disarmament--to sign an agreement on medium-range missiles?"

"That might not be a bad thing to do," Mr Eaton replied somewhat indefinitely.

Preoccupied with our conversations, we had failed to notice that the populated streets of Kiev were already moving by the windows of our bus.

"How beautiful Kiev is," said Mikhailis Menikos. "How much life there is in it, how many brilliant colors!"

11004

CSO: 1800/568

PLANT OPERATIONS

SCIENTISTS OPPOSE EXPANSION OF CHERNOBYL AES

PM090909 Moscow LITERATURNAYA GAZETA in Russian 27 May 87 p 13

[Article by K. Grigoryev and S. Kiselev, own correspondents for the Ukrainian SSR: "Controversy Around the Third Phase of the Chernobyl AES"]

[Text] Kiev--A rather unusual discussion took place in Kiev at the end of March. It was not an assessment of a new show or an art exhibition that was submitted for the public's verdict. It did not even have anything to do with preparations for the spring floods, which were expected to be abundant and even dangerous in places in the republic. The topic of conversation was the plan to expand the Chernobyl AES.

The point is that the idea of constructing a No 5 power unit and No 6 power unit at Chernobyl was conceived long before the No 3 and No 4 reactors were built and commissioned. And even though malicious tongues claimed even then that the scheme was based on the notorious attraction of gigantomania (an AES with 6 1-gigawatt power units would have been the world's largest power station in terms of capacity), experts were of the opinion that the expansion plan was fully justified: It was argued that the necessary material and technical base had been created, stable collectives of construction workers and operators existed, the town of Pripyat had been developed and could grow in parallel with the power station, and, finally, experience in construction work and accident-free operations had been accumulated at the Chernobyl AES.... Construction and installation work on building the third phase of Chernobyl AES, in other words the No 5 and No 6 power units, started in 1981 (by now one-third of capital investments for the No 5 power unit has been assimilated). The No 5 reactor was due to come on line in the fall of 1986 but, naturally, construction work was halted in the spring, following the accident at the No 4 power unit.

So there was a public discussion of this project, organized by the Scientific and Technical Society of the Power and Electrical Equipment Industry, or rather its Kiev Board and the Ukrainian Republican Board's Nuclear Power Section. Taking part in the conversation were more than 60 experts and scientists from the most diverse specialized fields. In the past, you have to agree, it was not customary to submit such questions for broad discussion by the public, if only the scientific and technical public. The authoritative opinion of the authors of such projects was seen as an irrefutable guarantee

of their correctness and reliability. And if some of them were actually discussed "openly," that was done purely as a matter of form, according to the principle: If it has to be, it has to be. There is no point in embarking on verbal procrastination!

The affirmation of democratic principles in our society on which the party has embarked, on the one hand, and the recent bitter lesson resulting from the Chernobyl AES accident, on the other hand, brought the incumbent leaders of the nuclear power industry face to face with the need to make technical decisions in a more responsible fashion, in an atmosphere of collegiality, taking various opinions into account.

The discussion of the Chernobyl AES expansion plan began with reports by chief engineers representing the "Atomenergoprojekt" Institute's Kharkov and Moscow Departments. They briefed the meeting on what constitutes the third phase (which is, by the way, essentially very similar to the second phase). True enough, the plan makes provisions for the implementation of a number of additional measures to ensure operational safety: installing two additional diesel generators and separate fire-extinguishing and ventilation systems, boosting the productivity of aerosol filters in extraction systems, improving the diagnostics of the condition of metals in main equipment and pipelines, creating additional reactor protection systems, redesigning the accident containment system, replacing the bitumen waterproofing on the roof with a noncombustible material, and so on. There are so many items that it is impossible to list them all, but the aforementioned are sufficient to show people: Yes, a considerable amount of additional work has been done from the safety viewpoint, and provisions have been made for the occurrence of so-called regular situations or, to put it simply, accidents. Due credit must be given to the planners on this point. Even so, though, the question remains: Why is it that they seem to have overlooked many other problems, not simply technical ones but more profound and substantive ones? For example: How is the third phase of the AES to be built while the site's decontamination is still incomplete? Numerous unexplained points of this nature emerged. Here is how some of them appear in the discussion transcript:

"Question: Have estimates been prepared for the cost of constructing the third phase under the changed conditions following the No 4 power unit accident?

"Answer: The 'Atomenergoprojekt' Institute has prepared no such estimates.

"Question: Under these conditions, how will people live and work, how will a construction industry base be created, how will equipment be delivered and materials be stored?

"Answer: The institute has not yet tackled this question."

Following the main speakers, opinions were expressed by participants in the public discussion: Ukrainian Academicians A. N. Alymov, N. M. Amosov, and A. M. Grodzinskiy; A. Ye. Smyshlyayev, deputy chief engineer of Chernobyl AES;

scientific staffers of republican academic institutes for nuclear research, hydrobiology, geochemistry, and mineral physics; representatives of the "Atomenergoprojekt" Institute's Kiev Department; senior officials from the Ukrainian Ministries of Geology, Land Reclamation, and Water Resources, and others. They spoke about different aspects, each, so to speak, about his own sphere, but ultimately the essence of the statements boiled down to the fact that the current plan for the third phase of Chernobyl AES is clearly out of date, does not take into consideration the situation which has developed following the accident, and therefore cannot be recommended for implementation.

Without going deep into technical details, let us mention several economic, ecological, medical, and social points which, in the opinion of participants in the discussion, are virtually ignored in the plan. They believe that it is impossible to make a decision to construct two new power units without comparing the proposed expenditure with the existing material, technical, financial, and labor resources, without taking into account the long-term forecast of radiation conditions in the power station zone and the current decontamination of the territory, buildings, structures, and equipment. It is well known that highly toxic radioactive isotopes with a long half-life still remain at and around the industrial site, especially in the forest which has been given the epic name "red forest," and that construction and installation work could result in the further spread of this contamination in the locality via the atmospheric transmission of machine-generated and radioactive dust. In short, the actual situation is such that work on building the new power units cannot continue until the consequences of the accident have been completely eliminated.

And finally, there is the psychological knot of problems. The collective of third phase construction workers which once existed has virtually disintegrated. Today there are difficulties in finding highly skilled cadres even to staff the station's operational power units. If the tour of duty method, which was adopted out of necessity for operating the first phase of the Chernobyl AES, were to be applied in the future when constructing the third phase, this could have a negative effect on the quality of construction work at the station's operational reliability. After all, the temporary nature of any work usually diminishes personal responsibility and, furthermore, labor in stressful conditions results in people's greater susceptibility to fatigue.

Here is the opinion of Hero of Socialist Labor Academician N. M. Amosov, member of the Ukrainian SSR Academy of Sciences, who spoke at the discussion.

"I am amazed by the very raising of the question of whether or not to build the third phase," Nikolay Mikhaylovich said. "After tens of thousands of people have suffered a grave mental trauma and are still living in fear of the future, is there a moral right to expose them to new doubts and fears? And these fears are not groundless. The slightest rise in radiation causes fear, even if its level remains within safe bounds. And the danger of radiation will be very real for the construction workers on the site. Is it necessary

to issue a new call for heroes: 'Go and build the third phase despite the danger?' No, the construction of new reactors in Chernobyl is a dubious venture..."

A purely economic question: How much more money will have to be added to justify the capital already invested? It must be taken into account that the additional construction work will be very costly: Workers must be paid for their heroism, and the ensuring of total safety will also cost a vast amount. For example, it is necessary to remove large quantities of contaminated soil and transport it away from the site zone. And if the engineers have now thought up so many new solutions enhancing the operational safety of the new reactors, will the existing shell of the building be suitable for their implementation? Or will the walls which are already standing necessitate compromises once more? Generally speaking, would it not be simpler and cheaper to implement these excellent inventions at another construction site?

"There is a widespread belief in science that experience generates confidence," we were told by Academician A. M. Grodzinskiy of the Ukrainian SSR Academy of Sciences. "I believe that in actual fact experience generates doubts. Only those who have no experience have complete confidence. Evidently, many people--and I am one of them--accepted the reliability of nuclear power stations as a given value, and assigned to doubts not even one-millionth but one-billionth of that value. But Chernobyl proved that even one-billionth can be greater than the accepted value and that total confidence in the reliability of equipment and of the people looking after it can turn into an enormous calamity. Alas, the present plan for the construction of the third phase of the Chernobyl AES is evidence of just such confidence, which takes no account of doubts bred by experience. This is why we participants in the public discussion of the project spoke out against the planned expansion of the station."

It only remains to add that the decision by representatives of scientific and technical community "not to recommend the plan for implementation" was adopted by an overwhelming majority of votes (only two voted against it). We are, of course, perfectly aware that the fate of such projects is not decided by votes. Nonetheless, the broad discussion of problems connected with them under the conditions of expanding openness in the country--and this can be confidently said today!--certainly makes it possible to avoid the mistakes of the past, when decisions were not always comprehensively and thoroughly thought out.

From the Editorial Office. While this article was being prepared for publication, it was officially announced that construction work on the No 5 and No 6 power units at Chernobyl AES, started before the accident, will not continue. This was announced by A. M. Petrosyants, chairman of the USSR State Committee the Utilization of Atomic Energy, in reply to questions from TASS correspondents. The very fact that there was a public discussion of a problem which is so important for the entire country assumes all the more significance under the conditions of expanding openness.

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PLANT OFFICIALS INTERVIEWED ON SAFETY, RELIABILITY

Kiev PRAVDA UKRAINY in Russian 14 May 87 p 4

[Article by O. Borisov: "Everything is Functioning Normally: Chernobyl Today"]

[Text] Mikhail Umanets, the former chief engineer of the Leningrad Nuclear Electric Power Plant and now the new director of the Chernobyl Nuclear Electric Power Plant, said quietly, with a calm smile: "I have gone swimming in the Pripyat. They've done a good job of decontaminating the river basin." He said this, incidentally, too quietly, but I was sitting two paces from him --at the briefing -- and heard this shy (can it be believed?) admission clearly.

Actually, it is not easy to believe. Humanly understandable anxiety about the radioactivity thrown off by the damaged unit has been expressed in European countries hundreds and thousands of kilometers away, even on other continents. Pripyat, as they say, is in the shadow of the mutinous reactor. So, is this just bravado? Sham heroism? A pill to quiet distressed people?

Hardly. If only because, since Chernobyl, this is not what we have been. The measure of responsibility has become a basically different one. For our work, our words, our deeds. And, first of all, on the part of those whom, from the night of 26 April 1986 fate has placed, on a working and professional plane, in close proximity to the tragedy.

Yes, a year has passed since, at 23 minutes and 40 seconds past one o'clock in the morning on that ill-starred night, an operator, trying to compensate for a series of earlier, sequentially absurd personnel errors and to hold the powerful energy-producing unit in check, pushed the final button on the control panel -- A3-5...

An analysis, made by leading Soviet specialists soon after the drama which then occurred, showed that the reactor and the technical systems serving it had no noticeable defects. Many experts from other countries, who carefully familiarized themselves with the RBMK type of reactor used at a number of Soviet nuclear electric power plants, also agreed with this, incidentally. Its creators had failed to provide only one link in the safety system of such power units -- a link which would block any level of slovenliness and lack of

discipline on the part of man. And it is here that the chain snapped. It snapped, and its ends inflicted a painful blow to God knows what basis existed for our cultivated complacency concerning the atom. Operating regulations were violated, and the atom did not forgive this. The pressing of button A3-5, a signal from which caused all control and safety rods to enter the fuel core in order to stop an unplanned build-up in reactor capacity, turned out to be too late.

A Guarantee of Reliability

"After the Chernobyl accident," says the deputy director of the Institute for Exploitation of Nuclear Electric Plants, Yevgeniy Larin, "leading Soviet nuclear scientists and specialists once again carefully analyzed the technical principles and the philosophy which serve as a basis for planning nuclear electric power plants of the Chernobyl type. In 1986, all RBMK reactors were systematically shut down on in order to make it possible to carry out a special review of plans and equipment. I can say that not a single serious flaw or mistake was found in the idea itself of creating such nuclear electric power plants. The conclusion remained the same: in the system of man and machine, it was the man that did not work."

Can such a conclusion be reassuring to the public, and not only the Soviet public? It, this conclusion, can be understood, but it cannot be accepted, and herein lies the imperative of the moment. It is reassuring that this position is completely shared by those who are responsible for the further strategy of nuclear power production in our country. The measures which are being taken testify to this. Understanding that everyone has the right to know their logic, our people responsible for this are regularly providing information concerning these measures to the public and, in particular detail, to the appropriate organs of MAGATE [United Nations International Agency on Atomic Energy].

What are these measures? There is, in essence, one supreme task: if, within the man-machine system, it is the man that doesn't work, that makes slips, then the machine, under all conditions, must itself prevent an accident. Basic efforts in this direction have already been undertaken. "Steps have been taken so that, even in cases of the most gross of personnel errors, the reactor will stop, under the control of an automatic protection system," advises Mikhail Umanets. "Moreover, no fundamental design changes to the reactor were required."

They were not required because all previous experience in operating RBMK reactors (and these account for half of Soviet nuclear power capacity) convinces us of their basic reliability. All post-accident changes and circuit improvements serve first and foremost as added insurance against an incident of subjective error. For, as has been correctly noted, "we are, after all, only human."

The essence of these energetic actions is as follows. Within a reactor, a so-called "positive steam coefficient of reactivity" may appear, which can result in an undesirable run-away of the reactor. Now, in all RBMK reactors, steps are being taken to prevent their acceleration under any sort of technical

procedure violations. A second emergency step is a sharp increase in the operating speed of the accident-prevention system. For example, on the basis of servo drive modernization, the time needed for entry of control rods into the fuel core in response to accident prevention signals has been almost cut in half -- from 18-20 seconds to 10-12. A basic modernization of diagnostic systems and of systems for registering the parameters of the power unit is planned, and this will make it possible more quickly and with a greater degree of reliability to predict the nature of possible deviations from normal operation. Other measures include the careful retraining of the personnel of nuclear electric power plants. A system has been established under which a power unit can be placed into operation after it has been shut down for any reason whatsoever only in the presence of the nuclear power plant's senior engineer or, in an exceptional case, his deputy. "In the future, anybody who, even in the slightest way, permits deviations from regulations," says the new director of the Chernobyl nuclear electric power plant, "will be immediately removed from our staff. We might add that, from today on, this rule is also mandatory for all other Soviet nuclear electric power plants.

The Plant and its Surroundings

Perhaps the most weighty argument in favor of this statement lies in the fact that an absolute majority of the plant's personnel have now returned to the plant and have taken up their working places.

Power Unit No. 1 at the Chernobyl nuclear electric power plant was returned to operation on 26 September 1986. After a thorough testing of the various systems and painstaking decontamination, of course. In November, the reactor was tested at nominal capacity -- 1000 megawatts. In the same month, personnel "reawoke" Power Unit No. 2 and in December they also checked its operation at full capacity. Everything functioned normally.

One indicator used by specialists to evaluate the quality of a plant's work is the coefficient of utilization of installed capacity. And so, during the first quarter of this year, this came to 97 percent for the two units that have been returned to service. From the viewpoint of energy specialists, this is an extremely high coefficient.

The radiation situation in the areas where personnel are operating is a subject of special attention by appropriate services. Analysis has shown that the radiation dosage level of 5 rem (the biological equivalent of the rentgen), which is accepted as permissible in our country, will not be exceeded in anybody's case. Taking into account that decontamination work is continuing and that the radiation background will continue to be reduced due to natural radionuclide decay, then the problem, doctors testify, is becoming less acute.

As regards Unit No. 3, which is located under the same roof as the one which suffered the accident (they are separated by a wall), work here on checking out all systems and parts still has not been completed.

The victim itself, isolated for the long term in a sarcophagus larded with apparatus and filters, is quieting down. A system for continuous monitoring

of the heat level of internal metal parts has advised that the maximum temperature was 112 degrees in February, 100 degrees at the end of March, and already today would not boil the water in a teapot.

...The Plant's director goes swimming in Pripyat. He is a physicist, and it is difficult to believe that he does not know what he is doing. Thank God that Chernobyl and the world which surrounds it are growing healthy again.

13032

CSO: 18000/567

PLANT OPERATIONS

BRIEFS

VISIT BY H. BLIX--H. Blix, director general of the IAEA, visited the Chernobyl AES on 13 January accompanied by other persons by official invitation to the USSR of the Soviet Government. They were shown the work that had been accomplished on the plant's first and second units, which had once more been put in operation after all the necessary safety measures were carried out in connection with the accident that had damaged the fourth unit. The guests viewed the structure sealing the fourth unit and were provided information on operation. On the same day, H. Blix and his party were received by Ukrainian SSR Council of Ministers Chairman A. P. Lyashko. Participating in the visit to the Chernobyl AES were USSR Atomic Energy Minister N. F. Lukonin, USSR State Committee for Utilization of Atomic Energy Chairman A. M. Petrosyants, and other officials. [TASS] [Text] [Moscow PRAVDA in Russian 14 Jan 87 p 4] 13005

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